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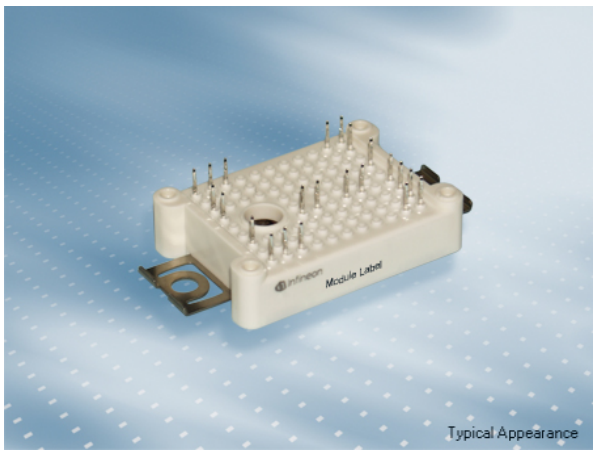
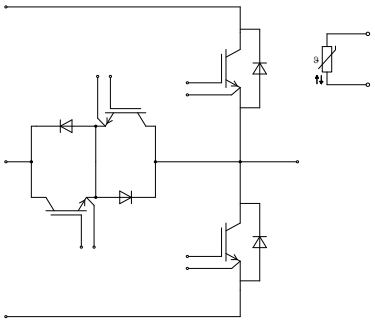
Technische Information / Technical Information

IGBT-Modul
IGBT-Module

F3L75R12W1H3_B11

Vorläufige Daten / Preliminary Data





V_{CES} = 1200V
$I_{C\ nom}$ = 75A / I_{CRM} = 150A

Typische Anwendungen
- 3-Level-Applikationen
- Solar Anwendungen

Typical Applications
- 3-Level-Applications
- Solar Applications

Elektrische Eigenschaften
- Niederinduktives Design
- Niedrige Schaltverluste
- Niedriges V_{CEsat}

Electrical Features
- Low Inductive Design
- Low Switching Losses
- Low V_{CEsat}

Mechanische Eigenschaften
- Al_2O_3 Substrat mit kleinem thermischen Widerstand
- Kompaktes Design
- PressFIT Verbindungstechnik
- Robuste Montage durch integrierte Befestigungsklammern

Mechanical Features
- Al_2O_3 Substrate with Low Thermal Resistance
- Compact design
- PressFIT Contact Technology
- Rugged mounting due to integrated mounting clamps

Module Label Code

Barcode Code 128

Sample
00000123456000000000000

DMX - Code

Content of the Code	Digit
Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

prepared by: CM	date of publication: 2015-08-26	
approved by: AKDA	revision: V2.0	UL approved (E83335)

Vorläufige Daten
Preliminary Data

IGBT, T1-T4 / IGBT, T1-T4

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1200	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	75	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_C = 100°C, $T_{vj\,max}$ = 175°C T_C = 25°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$ I_C	30 45	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	150	A
Gesamt-Verlustleistung Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 175°C	P_{tot}	275	W
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 30 A, V_{GE} = 15 V, T_{vj} = 25°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 125°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 150°C	$V_{CE\,sat}$		1,45 1,55 1,60	1,70	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 2,60 mA, V_{CE} = V_{GE}, T_{vj} = 25°C	V_{GEth}	5,05	5,80	6,45	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V	Q_G		0,57		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C	R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{ies}		4,40		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{res}		0,235		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1200 V, V_{GE} = 0 V, T_{vj} = 25°C	I_{CES}			1,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C	I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Gon} = 6,8 Ω, T_{vj} = 150°C	$t_{d\,on}$		0,03 0,03 0,03		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Gon} = 6,8 Ω, T_{vj} = 150°C	t_r		0,01 0,012 0,012		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Goff} = 6,8 Ω, T_{vj} = 150°C	$t_{d\,off}$		0,25 0,32 0,34		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Goff} = 6,8 Ω, T_{vj} = 150°C	t_f		0,025 0,04 0,045		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 30 A, V_{CE} = 400 V, L_S = 40 nH, T_{vj} = 25°C V_{GE} = 15 V, di/dt = 2600 A/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Gon} = 6,8 Ω, T_{vj} = 150°C	E_{on}		0,40 0,60 0,70		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 30 A, V_{CE} = 400 V, L_S = 40 nH, T_{vj} = 25°C V_{GE} = 15 V, du/dt = 2400 V/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Goff} = 6,8 Ω, T_{vj} = 150°C	E_{off}		1,05 1,60 1,75		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 800 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt, t_P ≤ 10 µs, T_{vj} = 150°C	I_{SC}		270		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT	R_{thJC}		0,500	0,550	K/W

Vorläufige Daten
Preliminary Data

Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)	R_{thCH}		0,450		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C

Diode, D1 / D4 / Diode, D1 / D4

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1200		V
Dauergleichstrom Continuous DC forward current		I_F	30		A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	60		A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C	I²t	310		A²s

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 30 A, V_{GE} = 0 V, T_{vj} = 25°C I_F = 30 A, V_{GE} = 0 V, T_{vj} = 125°C I_F = 30 A, V_{GE} = 0 V, T_{vj} = 150°C	V_F		2,15 1,85 1,70	t.b.d.	V V V
Rückstromspitze Peak reverse recovery current	I_F = 30 A, - di_F/dt = 3000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 400 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 150°C	I_{RM}		85,0 90,0 95,0		A A A
Sperrverzögerungsladung Recovered charge	I_F = 30 A, - di_F/dt = 3000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 400 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 150°C	Q_r		2,30 2,95 3,30		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 30 A, - di_F/dt = 3000 A/µs (T_{vj}=150°C), T_{vj} = 25°C V_R = 400 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 150°C	E_{rec}		0,85 1,25 1,35		mJ mJ mJ
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode	R_{thJC}		0,700	0,750	K/W
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro Diode / per diode λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)	R_{thCH}		0,700		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C

Vorläufige Daten
Preliminary Data

IGBT, T2 / T3 / IGBT, T2 / T3

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Implementierter Kollektor-Strom Implemented collector current		I_{CN}	50	A
Kollektor-Dauergleichstrom Continuous DC collector current	T_C = 100°C, $T_{vj\,max}$ = 175°C T_C = 25°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$ I_C	30 60	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	100	A
Gesamt-Verlustleistung Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 175°C	P_{tot}	175	W
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 30 A, V_{GE} = 15 V, T_{vj} = 25°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 125°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 150°C	$V_{CE\,sat}$		1,25 1,30 1,30	1,50	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 0,80 mA, V_{CE} = V_{GE}, T_{vj} = 25°C	V_{GEth}	5,05	5,80	6,45	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V	Q_G		0,50		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C	R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{ies}		3,10		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{res}		0,095		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V, T_{vj} = 25°C	I_{CES}			1,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C	I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Gon} = 6,2 Ω, T_{vj} = 150°C	$t_{d\,on}$		0,022 0,022 0,025		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Gon} = 6,2 Ω, T_{vj} = 150°C	t_r		0,01 0,012 0,012		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Goff} = 6,2 Ω, T_{vj} = 150°C	$t_{d\,off}$		0,12 0,15 0,165		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 30 A, V_{CE} = 400 V, T_{vj} = 25°C V_{GE} = 15 V, T_{vj} = 125°C R_{Goff} = 6,2 Ω, T_{vj} = 150°C	t_f		0,025 0,037 0,04		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 30 A, V_{CE} = 400 V, L_S = 40 nH, T_{vj} = 25°C V_{GE} = 15 V, di/dt = 3000 A/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Gon} = 6,2 Ω, T_{vj} = 150°C	E_{on}		0,40 0,55 0,60		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 30 A, V_{CE} = 400 V, L_S = 40 nH, T_{vj} = 25°C V_{GE} = 15 V, du/dt = 4200 V/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Goff} = 6,2 Ω, T_{vj} = 150°C	E_{off}		0,90 1,20 1,30		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 360 V, t_P ≤ 8 µs, T_{vj} = 25°C V_{CEmax} = V_{CES} -L_{sCE} ·di/dt, t_P ≤ 6 µs, T_{vj} = 150°C	I_{SC}		350 250		A A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT	R_{thJC}		0,750	0,850	K/W

Vorläufige Daten
Preliminary Data

Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)	R_{thCH}		0,700		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C

Diode, D2 / D3 / Diode, D2 / D3

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}		650		V
Implementierter Durchlassstrom Implemented forward current		I_{FN}		50		A
Dauergleichstrom Continuous DC forward current		I_F		30		A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}		100		A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I²t		130 115		A²s A²s

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 30 A, V_{GE} = 0 V I_F = 30 A, V_{GE} = 0 V I_F = 30 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,45 1,35 1,30	1,65	V V V
Rückstromspitze Peak reverse recovery current	I_F = 30 A, - di_F/dt = 2600 A/µs (T_{vj}=150°C) V_R = 400 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		42,0 48,0 50,0		A A A
Sperrverzögerungsladung Recovered charge	I_F = 30 A, - di_F/dt = 2600 A/µs (T_{vj}=150°C) V_R = 400 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		1,80 2,40 2,60		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 30 A, - di_F/dt = 2600 A/µs (T_{vj}=150°C) V_R = 400 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,45 0,65 0,73		mJ mJ mJ
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode		R_{thJC}		0,800	1,10	K/W
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro Diode / per diode λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)		R_{thCH}		0,600		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		150	°C

NTC-Widerstand / NTC-Thermistor

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Nennwiderstand Rated resistance	T_C = 25°C	R_{25}		5,00		kΩ
Abweichung von R100 Deviation of R100	T_C = 100°C, R_{100} = 493 Ω	ΔR/R	-5		5	%
Verlustleistung Power dissipation	T_C = 25°C	P_{25}			20,0	mW
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/50}$		3375		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/80}$		3411		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298{,}15\ K))]$	$B_{25/100}$		3433		K

Angaben gemäß gültiger Application Note.
Specification according to the valid application note.

prepared by: CM	date of publication: 2015-08-26
approved by: AKDA	revision: V2.0

Vorläufige Daten
Preliminary Data

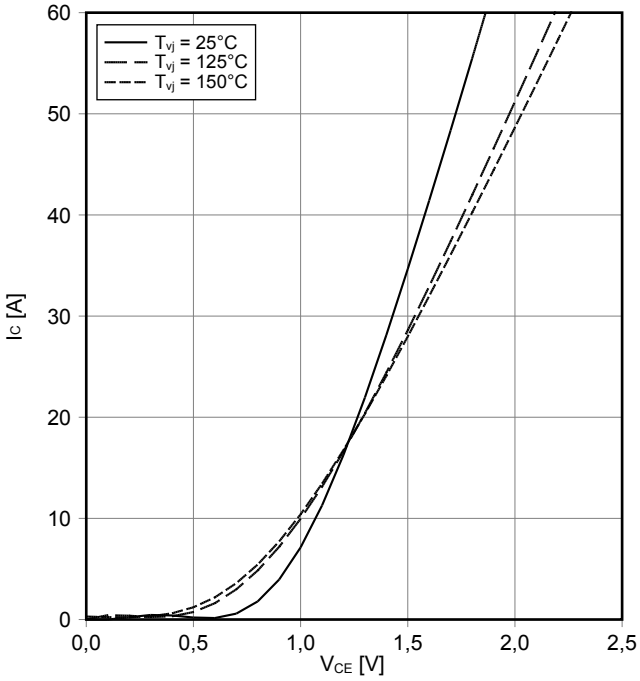
Modul / Module

Isolations-Prüfspannung Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}		3,0		kV
Innere Isolation Internal isolation	Basisisolierung (Schutzklasse 1, EN61140) basic insulation (class 1, IEC 61140)			Al_2O_3		
Kriechstrecke Creepage distance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			11,5 6,3		mm
Luftstrecke Clearance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			10,0 5,0		mm
Vergleichszahl der Kriechwegbildung Comperative tracking index		CTI		> 200		
			min.	typ.	max.	
Modulstreuinduktivität Stray inductance module		L_{sCE}		30		nH
Modulleitungswiderstand, Anschlüsse - Chip Module lead resistance, terminals - chip	T_C = 25°C, pro Schalter / per switch	$R_{CC'+EE'}$ $R_{AA'+CC'}$		5,00 6,00		mΩ
Lagertemperatur Storage temperature		T_{stg}	-40		125	°C
Anpresskraft für mech. Bef. pro Feder mountig force per clamp		F	40	-	80	N
Gewicht Weight		G		24		g

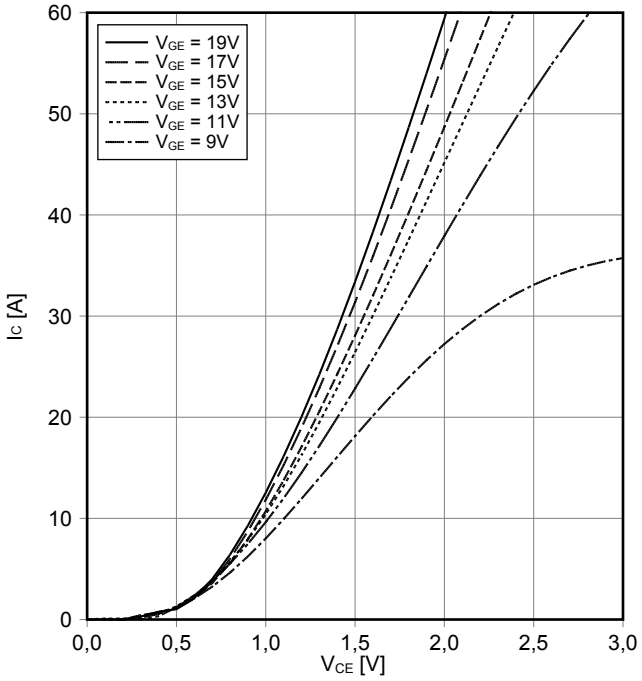
Der Strom im Dauerbetrieb ist auf 25A effektiv pro Anschlusspin begrenzt.
The current under continuous operation is limited to 25A rms per connector pin.

Vorläufige Daten
Preliminary Data

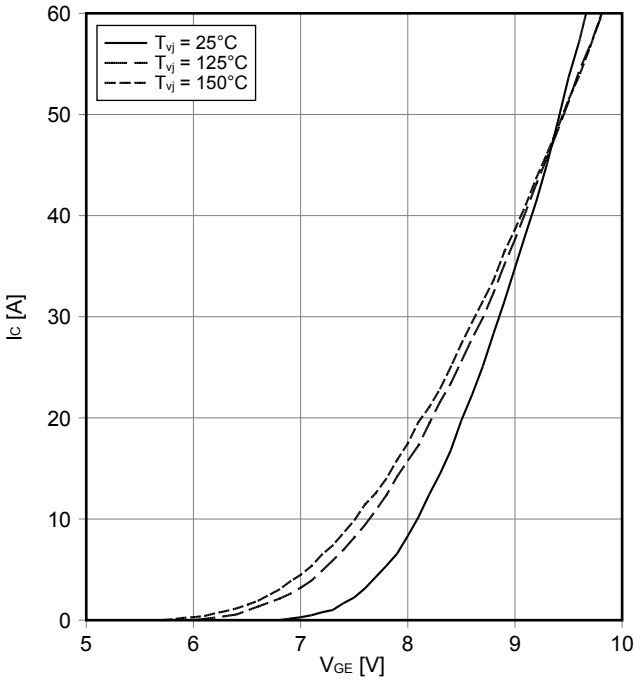
Ausgangskennlinie IGBT, T1-T4 (typisch)
output characteristic IGBT, T1-T4 (typical)
$I_C = f(V_{CE})$
V_{GE} = 15 V



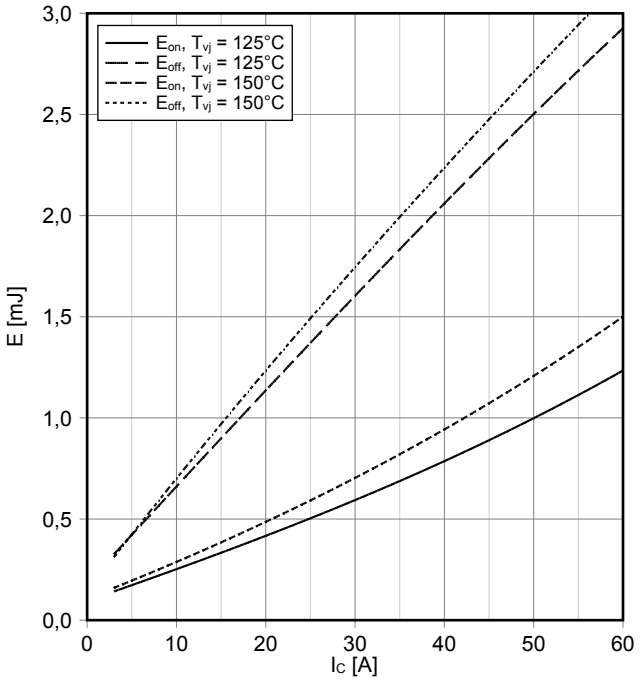
Ausgangskennlinienfeld IGBT, T1-T4 (typisch)
output characteristic IGBT, T1-T4 (typical)
$I_C = f(V_{CE})$
T_{vj} = 150°C



Übertragungscharakteristik IGBT, T1-T4 (typisch)
transfer characteristic IGBT, T1-T4 (typical)
$I_C = f(V_{GE})$
V_{CE} = 20 V



Schaltverluste IGBT, T1-T4 (typisch)
switching losses IGBT, T1-T4 (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 6.8 Ω, R_{Goff} = 6.8 Ω, V_{CE} = 400 V



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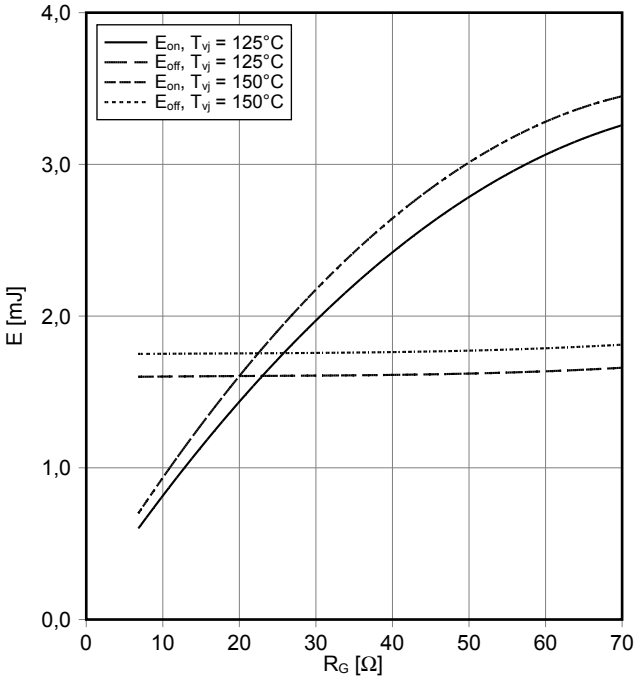
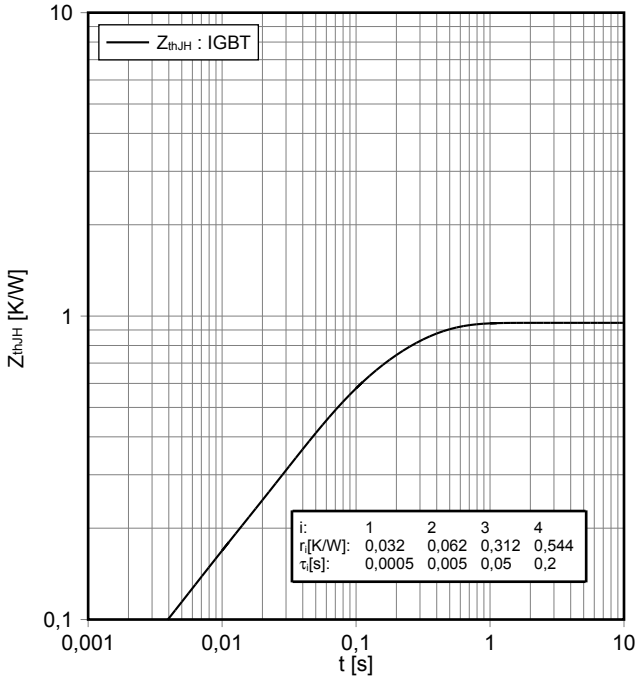
Vorläufige Daten
Preliminary Data

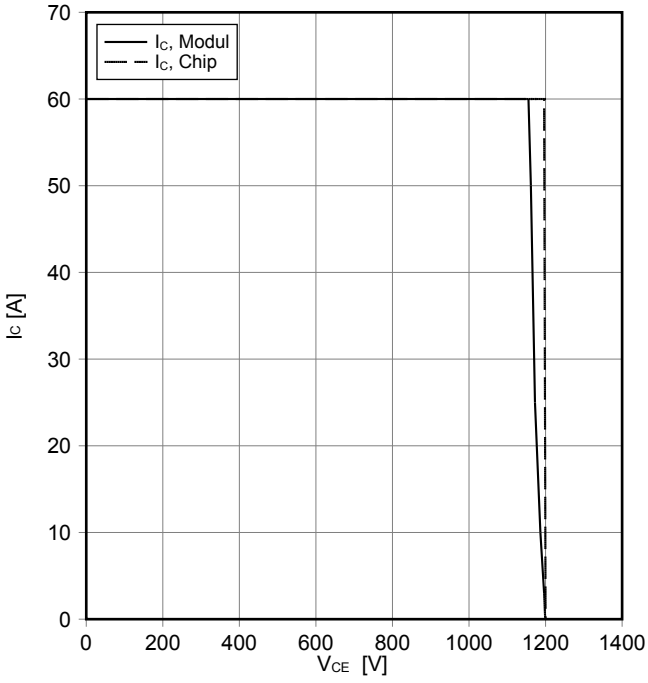
Schaltverluste IGBT, T1-T4 (typisch)
switching losses IGBT, T1-T4 (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
V_{GE} = ±15 V, I_C = 30 A, V_{CE} = 400 V



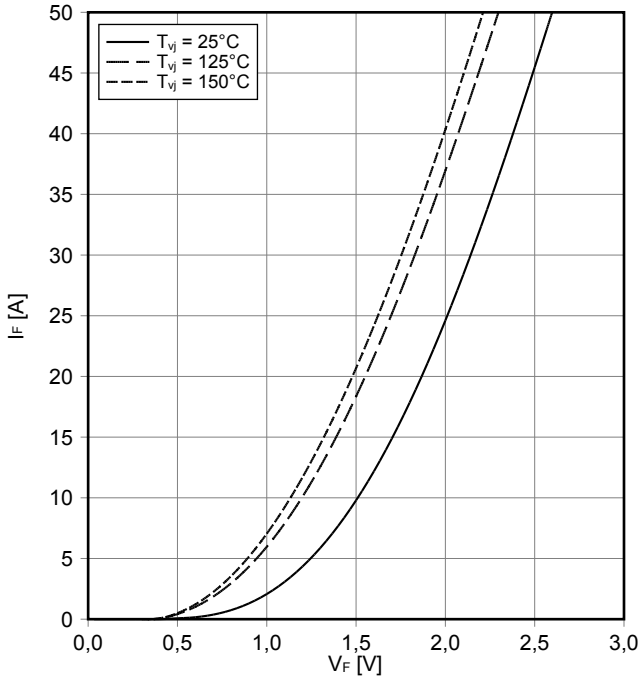
Transienter Wärmewiderstand IGBT, T1-T4
transient thermal impedance IGBT, T1-T4
$Z_{thJH} = f(t)$



Sicherer Rückwärts-Arbeitsbereich IGBT, T1-T4 (RBSOA)
reverse bias safe operating area IGBT, T1-T4 (RBSOA)
$I_C = f(V_{CE})$
V_{GE} = ±15 V, R_{Goff} = 6.8 Ω, T_{vj} = 150°C



Durchlasskennlinie der Diode, D1 / D4 (typisch)
forward characteristic of Diode, D1 / D4 (typical)
$I_F = f(V_F)$



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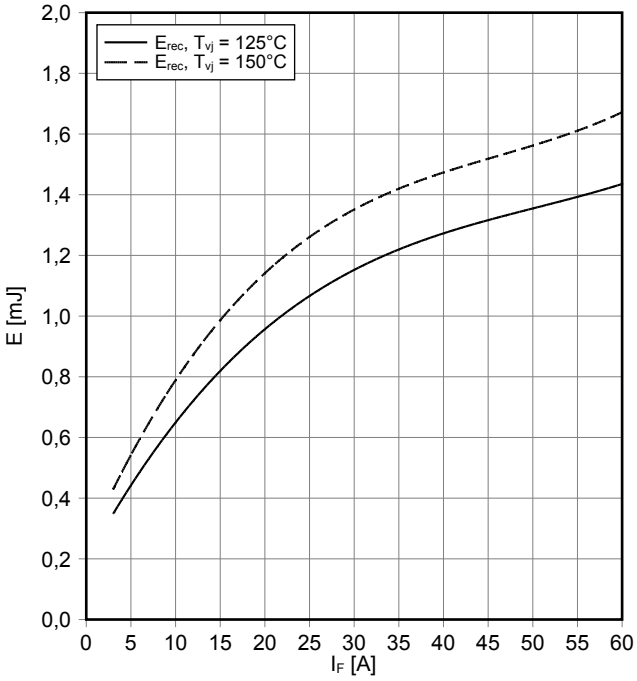
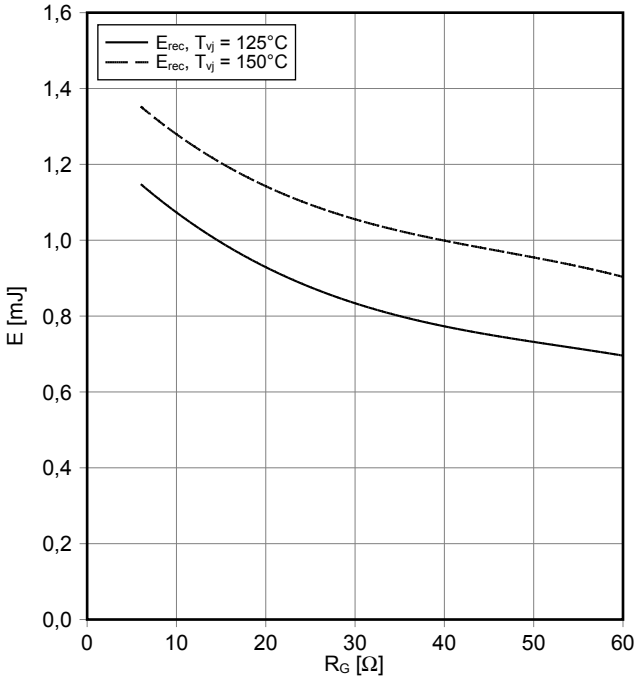
Vorläufige Daten
Preliminary Data

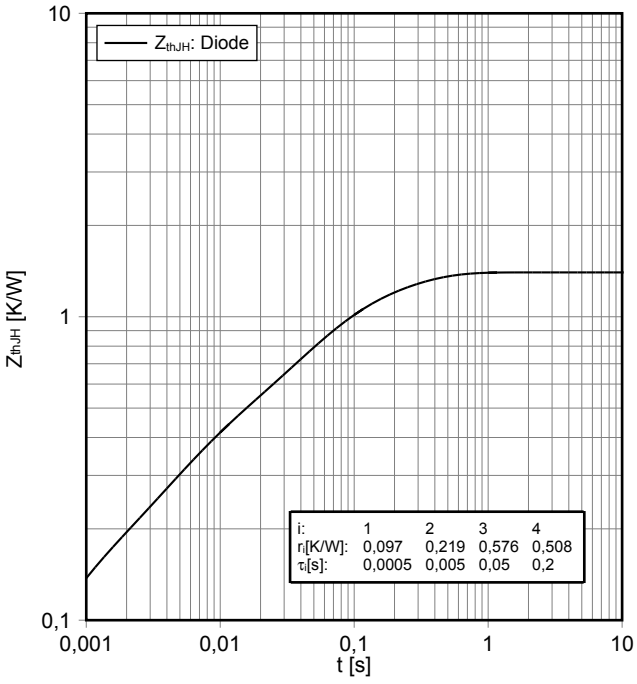
Schaltverluste Diode, D1 / D4 (typisch)
switching losses Diode, D1 / D4 (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 6{,}2\ \Omega$, $V_{CE} = 400$ V



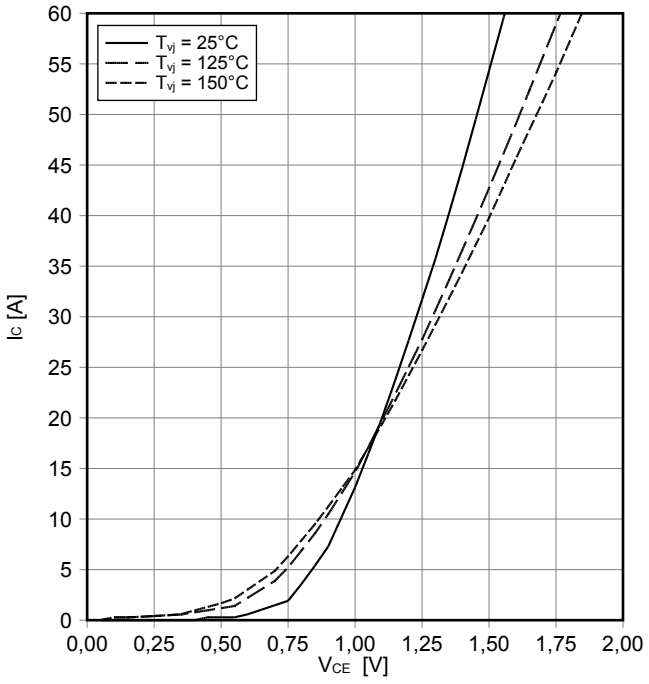
Schaltverluste Diode, D1 / D4 (typisch)
switching losses Diode, D1 / D4 (typical)
$E_{rec} = f(R_G)$
$I_F = 30$ A, $V_{CE} = 400$ V



Transienter Wärmewiderstand Diode, D1 / D4
transient thermal impedance Diode, D1 / D4
$Z_{thJH} = f(t)$



Ausgangskennlinie IGBT, T2 / T3 (typisch)
output characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



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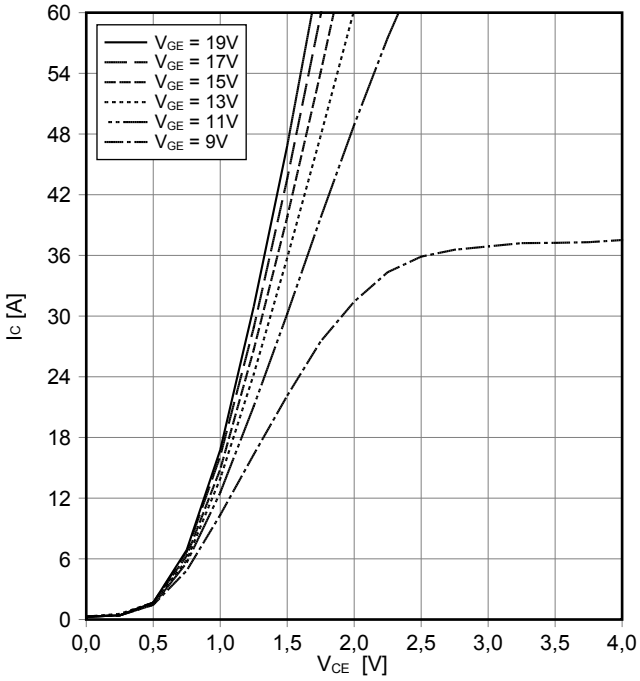
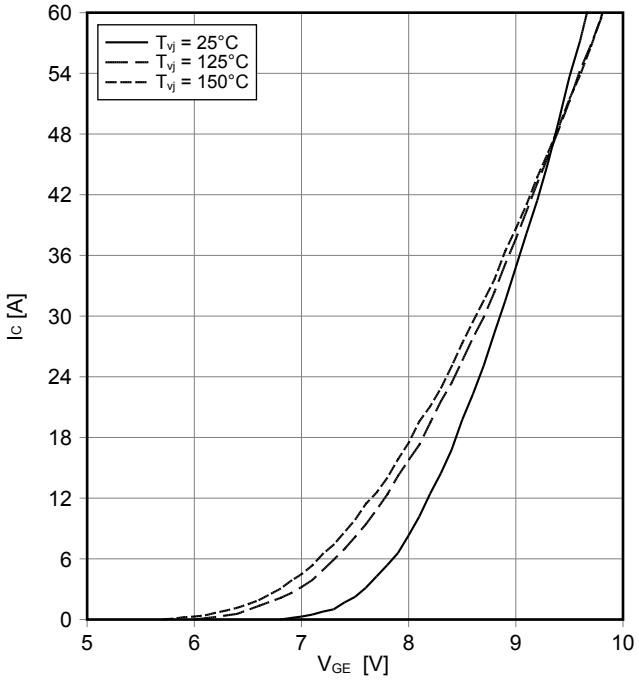
Preliminary Data

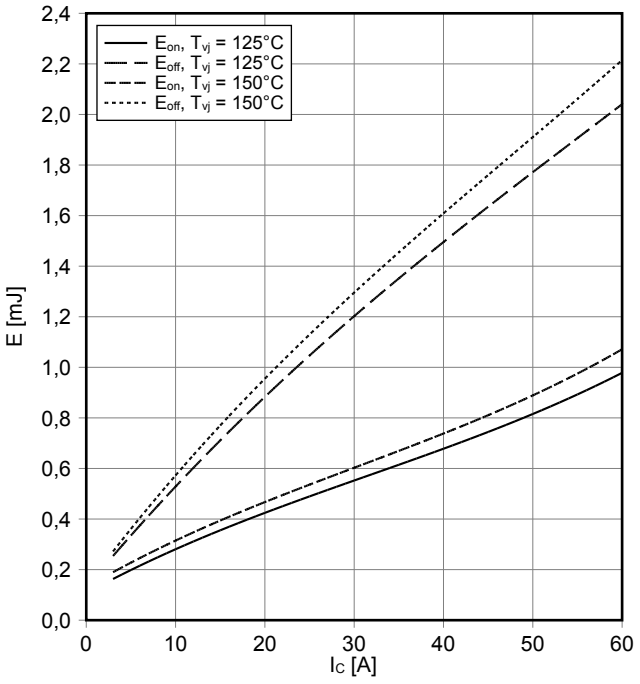
Ausgangskennlinienfeld IGBT, T2 / T3 (typisch)
output characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{CE})$
$T_{vj} = 150°C$



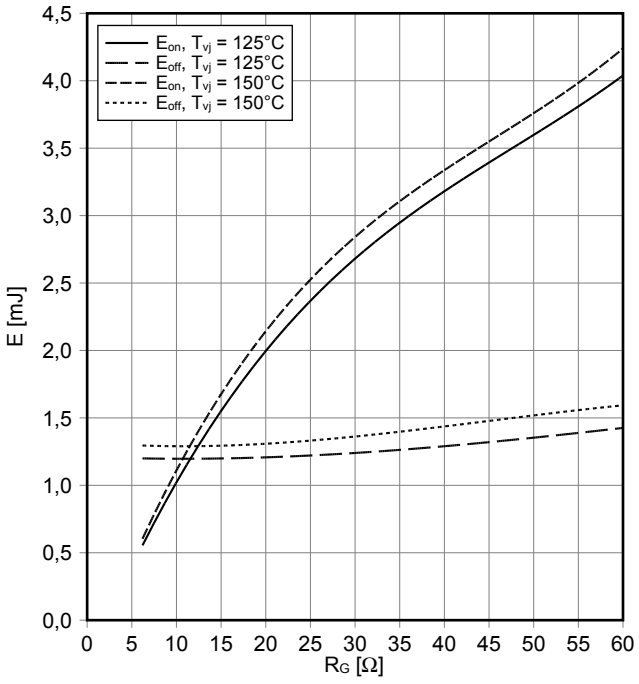
Übertragungscharakteristik IGBT, T2 / T3 (typisch)
transfer characteristic IGBT, T2 / T3 (typical)
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



Schaltverluste IGBT, T2 / T3 (typisch)
switching losses IGBT, T2 / T3 (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
$V_{GE} = \pm 15$ V, $R_{Gon} = 6.2\ \Omega$, $R_{Goff} = 6.2\ \Omega$, $V_{CE} = 400$ V



Schaltverluste IGBT, T2 / T3 (typisch)
switching losses IGBT, T2 / T3 (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
$V_{GE} = \pm 15$ V, $I_C = 30$ A, $V_{CE} = 400$ V



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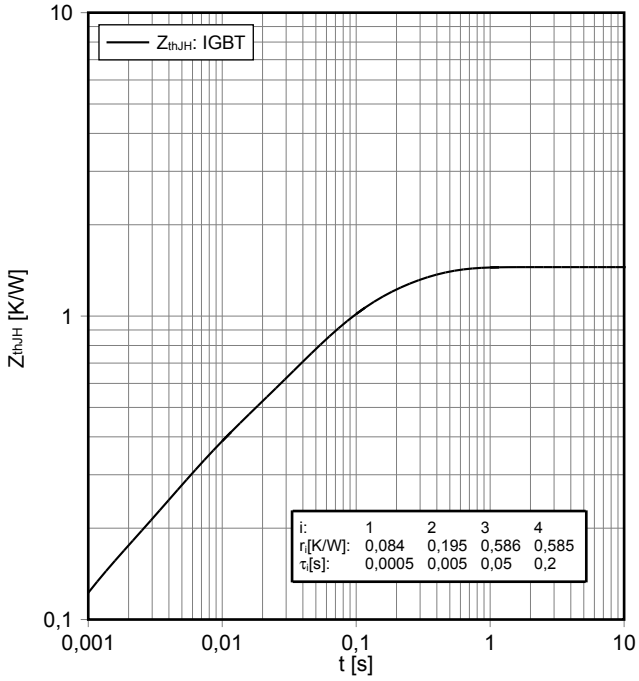
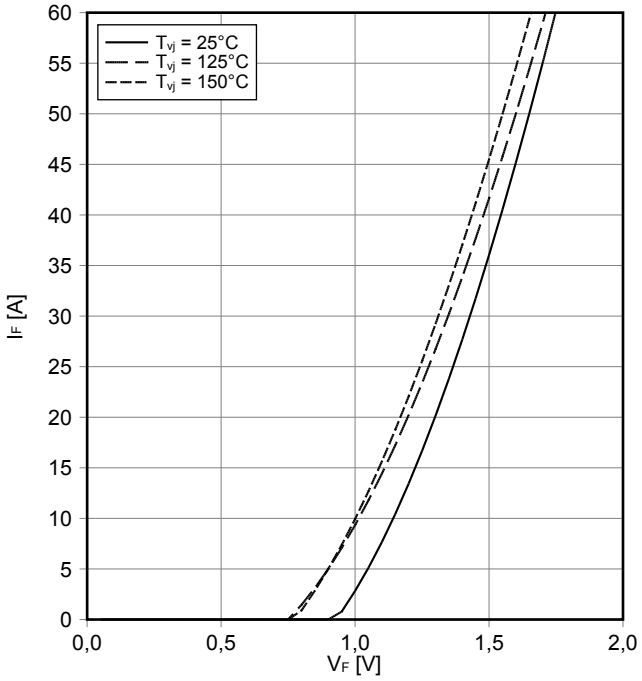
Vorläufige Daten
Preliminary Data

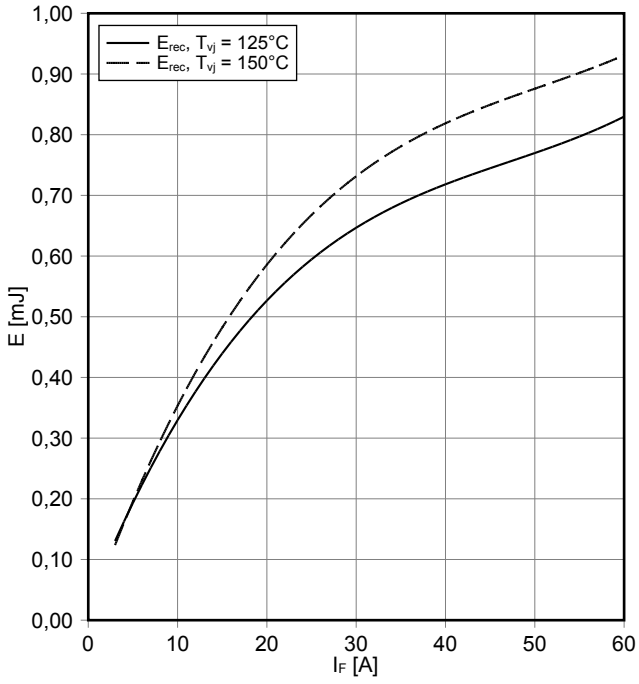
Transienter Wärmewiderstand IGBT, T2 / T3
transient thermal impedance IGBT, T2 / T3
$Z_{thJH} = f(t)$



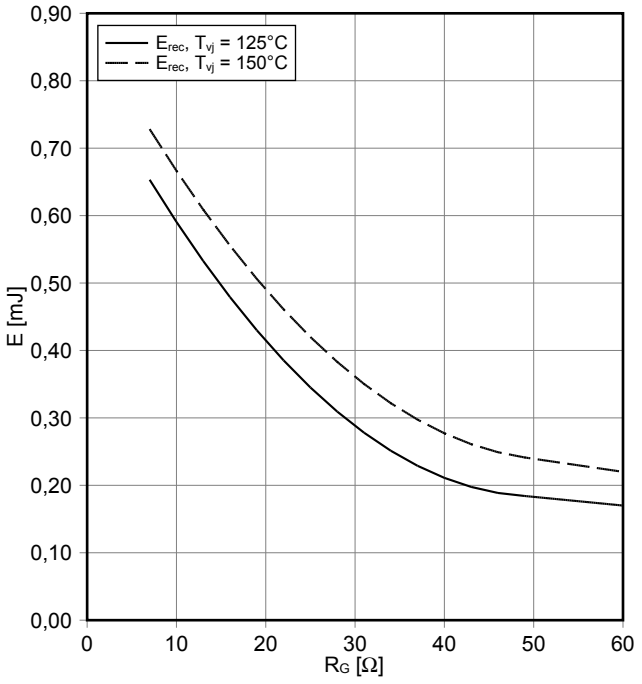
Durchlasskennlinie der Diode, D2 / D3 (typisch)
forward characteristic of Diode, D2 / D3 (typical)
$I_F = f(V_F)$



Schaltverluste Diode, D2 / D3 (typisch)
switching losses Diode, D2 / D3 (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 6.8\ \Omega$, $V_{CE} = 400$ V



Schaltverluste Diode, D2 / D3 (typisch)
switching losses Diode, D2 / D3 (typical)
$E_{rec} = f(R_G)$
$I_F = 30$ A, $V_{CE} = 400$ V



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Vorläufige Daten
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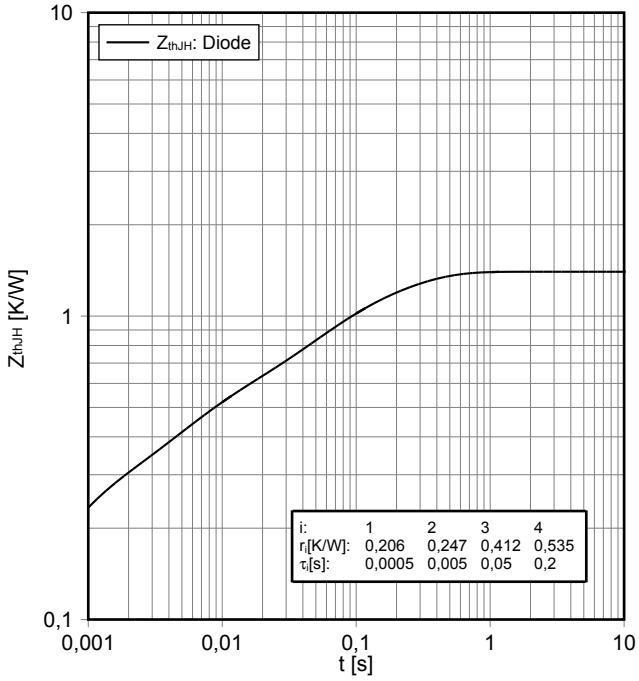
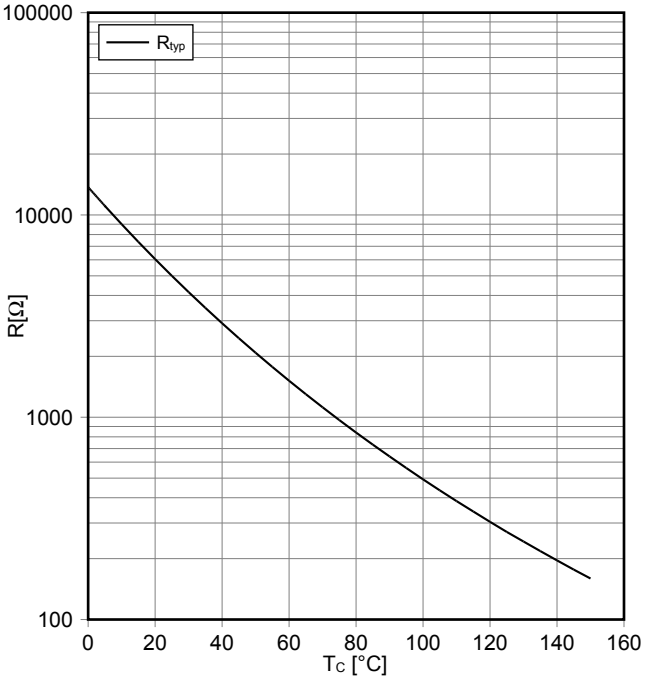
Transienter Wärmewiderstand Diode, D2 / D3
transient thermal impedance Diode, D2 / D3
$Z_{thJH} = f(t)$



NTC-Widerstand-Temperaturkennlinie (typisch)
NTC-Thermistor-temperature characteristic (typical)
$R = f(T)$



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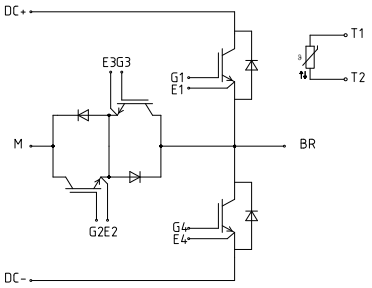
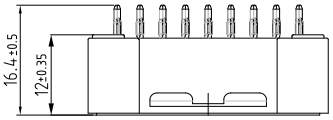
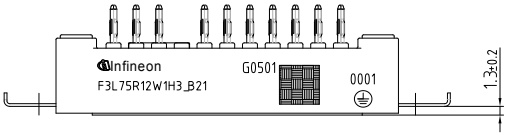
Vorläufige Daten
Preliminary Data

Schaltplan / Circuit diagram

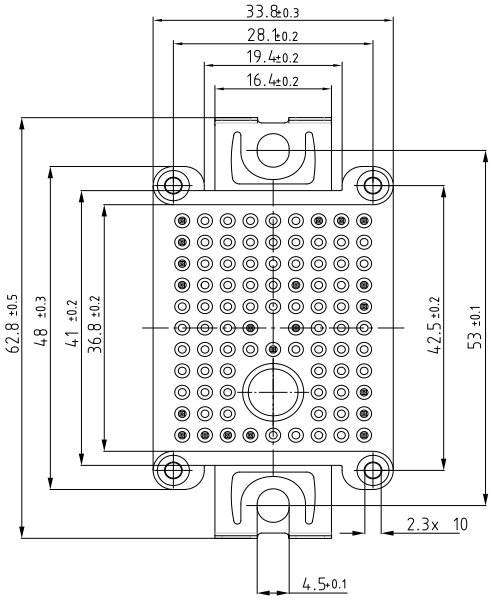


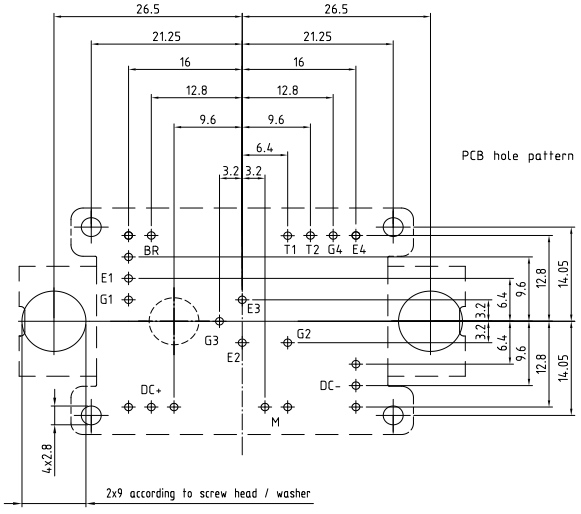
Gehäuseabmessungen / Package outlines





- Pin-Grid 3.2mm
- Tolerance of PCB hole pattern ⌖ ⌀0.1
- Hole specification for contacts see AN 2009-01
- Diameters of drill ⌀ 1.15mm
  and copper thickness in hole 25-50µm





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Vorläufige Daten
Preliminary Data

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- den Abschluss von speziellen Qualitätssicherungsvereinbarungen;
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- the conclusion of Quality Agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery depended on the realization of any such measures.

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