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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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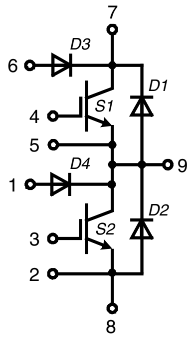
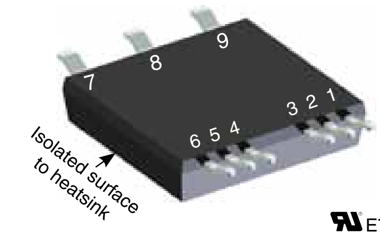
XPT IGBT phaseleg
ISOPLUS™
Surface Mount Power Device

I_{C25} = 43 A
V_{CES} = 1200 V
$V_{CE(sat)\,typ}$ = 1.9 V





E72873

IGBTs S1, S2			
Symbol	**Conditions**	**Maximum Ratings**	
V_{CES}	T_{VJ} = 25°C to 150°C	1200	V
V_{GES}		±20	V
I_{C25}	T_C = 25°C	43	A
I_{C80}	T_C = 80°C	30	A
I_{CM}	V_{GE} = 15 V; R_G = 39 Ω; T_{VJ} = 125°C	75	A
V_{CEK}	RBSOA, clamped inductive load; L = 100 µH	V_{CES}	
t_{SC} (SCSOA)	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 39 Ω; T_{VJ} = 125°C none repetitive	10	µs
P_{tot}	T_C = 25°C	150	W

Symbol	**Conditions**	**Characteristic Values** (T_{VJ} = 25°C, unless otherwise specified)			
		min.	**typ.**	**max.**	
$V_{CE(sat)}$	I_C = 25 A; V_{GE} = 15 V; T_{VJ} = 25°C		1.9	2.2	V
	T_{VJ} = 125°C		2.2		V
$V_{GE(th)}$	I_C = 1 mA; V_{GE} = V_{CE}	5.4		6.5	V
I_{CES}	V_{CE} = V_{CES}; V_{GE} = 0 V; T_{VJ} = 25°C			2.1	mA
	T_{VJ} = 125°C		200		µA
I_{GES}	V_{CE} = 0 V ; V_{GE} = ± 20 V			500	nA
$t_{d(on)}$	Inductive load; T_{VJ} = 125°C; V_{CE} = 600 V; I_C = 25 A; V_{GE} = ±15 V; R_G = 39 Ω		70		ns
t_r			40		ns
$t_{d(off)}$			250		ns
t_f			100		ns
E_{on}			2.5		mJ
E_{off}			3.0		mJ
$E_{(rec)off}$			tbd		
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz		tbd		pF
Q_{Gon}	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 25 A		76		nC
R_{thJC}				0.85	K/W
R_{thJH}	with heatsink compound (IXYS test setup)		0.95	1.3	K/W

Features

- **XPT IGBT**
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
  - short tail current for optimized performance in resonant circuits
- **Sonic™ diode**
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- **V_{CEsat} detection diode**
  - integrated into package
  - very fast diode
- **Package**
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - PCB space saving
  - enlarged creepage towards heatsink
  - application friendly pinout
  - low inductive current path
  - high reliability

Applications

- **Phaseleg**
  - buck-boost chopper
- **Full bridge**
  - power supplies
  - induction heating
  - four quadrant DC drives
  - controlled rectifier
- **Three phase bridge**
  - AC drives
  - controlled rectifier

IXYS reserves the right to change limits, test conditions and dimensions.

20120131b

Diodes D1, D2

Symbol	Conditions		Maximum Ratings	
I_{F25}	T_C = 25°C		40	A
I_{F80}	T_C = 80°C		27	A

Symbol	Conditions		Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 20 A	T_{VJ} = 25°C		1.9	2.4	V
		T_{VJ} = 125°C		1.9		V
I_{RM}	I_F = 20 A; R_G = 39 Ω; T_{VJ} = 125°C			30		A
t_{rr}	V_R = 600 V; V_{GE} = -15 V			350		ns
E_{rec}				0.85		mJ
R_{thJC}	per diode				0.9	K/W
R_{thJH}	with heatsink compound (IXYS test setup)			1.2	1.5	K/W

Diodes D3, D4

Symbol	Conditions	Maximum Ratings	
V_R	T_C = 25°C to 150°C	1200	V

Symbol	Conditions		Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 1 A	T_{VJ} = 25°C		1.7	2.2	V
		T_{VJ} = 125°C		1.5		V
I_R	V_R = 1200 V	T_{VJ} = 25°C			2	μA
		T_{VJ} = 125°C		30		μA
I_{RM}	I_F = 1 A; di_F/dt = -100 A/μs; T_{VJ} = 25°C			2.3		A
t_{rr}	V_R = 100 V; V_{GE} = 0 V			40		ns

Component

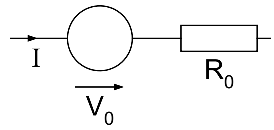
Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	I_{ISOL} ≤ 1 mA; 50/60 Hz	2500	V~
F_C	mounting force	40 ... 130	N

Symbol	Conditions	Characteristic Values min.	typ.	max.	
C_P	coupling capacity between shorted pins and backside metal		90		pF
d_S, d_A	pin - pin	1.65			mm
d_S, d_A	pin - backside metal	4			mm
CTI		400			
Weight			8		g

Ordering	Ordering Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	IXA30PG1200DHGLB-TRR	IXA30PG1200DHGLB	Tape&Reel	200	511846

Equivalent Circuits for Simulation

Conduction

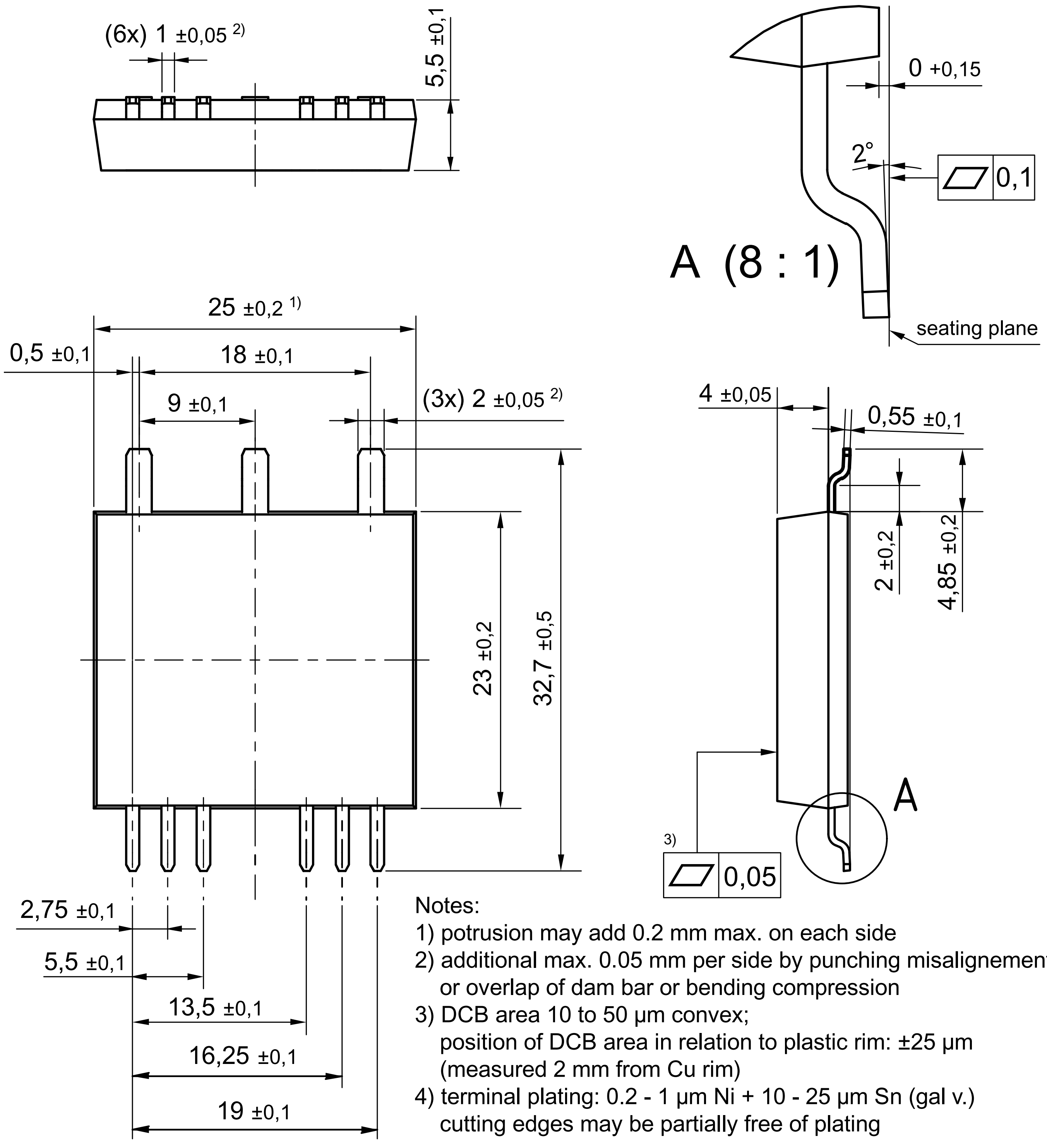


IGBTs (typ. at V_{GE} = 15 V; T_J = 125°C)
S1, S2 V_0 = 1.1 V; R_0 = 60 mΩ

Diodes (typ. at T_J = 125°C)
D1, D2 V_0 = 1.3 V; R_0 = 28 mΩ

IXYS reserves the right to change limits, test conditions and dimensions. 20120131b

Dimensions in mm (1 mm = 0.0394")



Notes:
1) potrusion may add 0.2 mm max. on each side
2) additional max. 0.05 mm per side by punching misalignement or overlap of dam bar or bending compression
3) DCB area 10 to 50 µm convex; position of DCB area in relation to plastic rim: ±25 µm (measured 2 mm from Cu rim)
4) terminal plating: 0.2 - 1 µm Ni + 10 - 25 µm Sn (gal v.) cutting edges may be partially free of plating

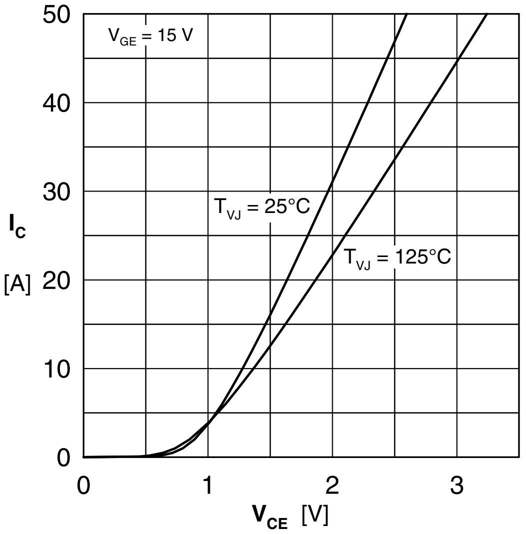


Fig. 1 Typ. output characteristics

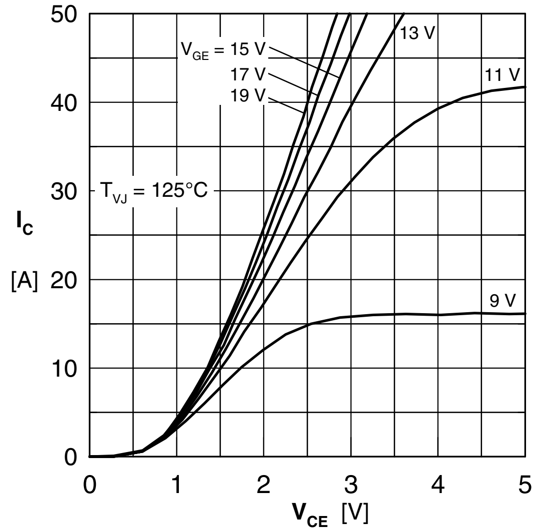


Fig. 2 Typ. output characteristics

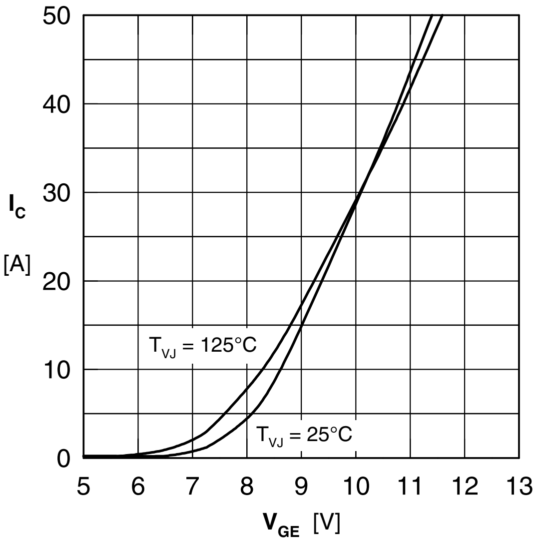


Fig. 3 Typ. tranfer characteristics

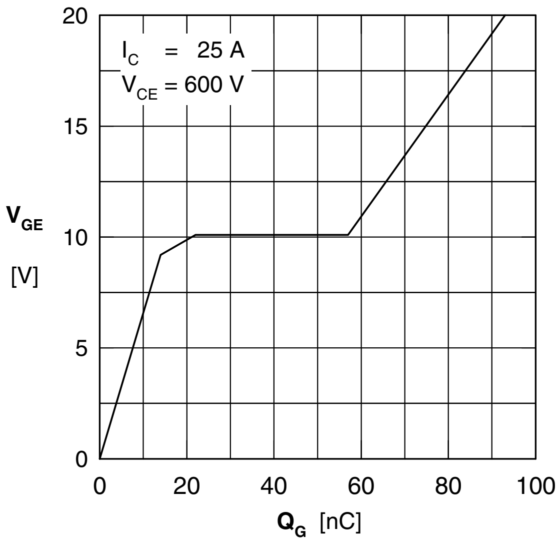


Fig. 4 Typ. turn-on gate charge

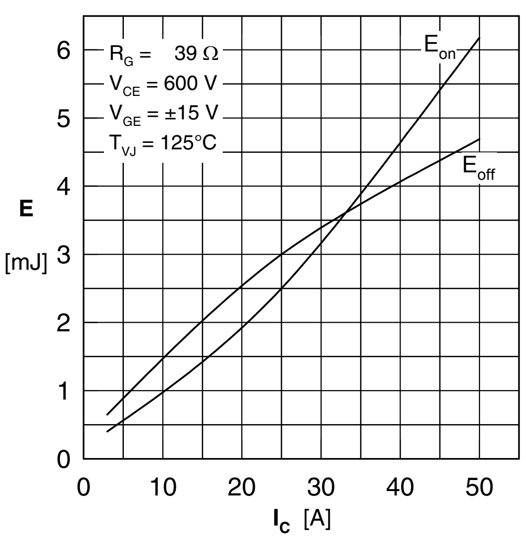


Fig. 5 Typ. switching energy vs. collector current

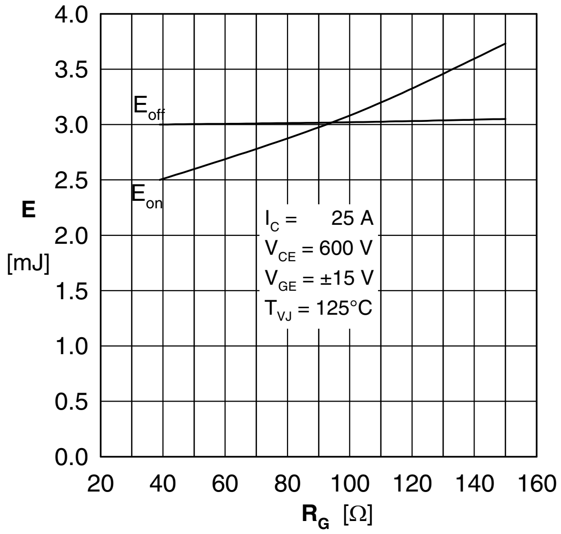


Fig. 6 Typ. switching energy vs. gate resistance

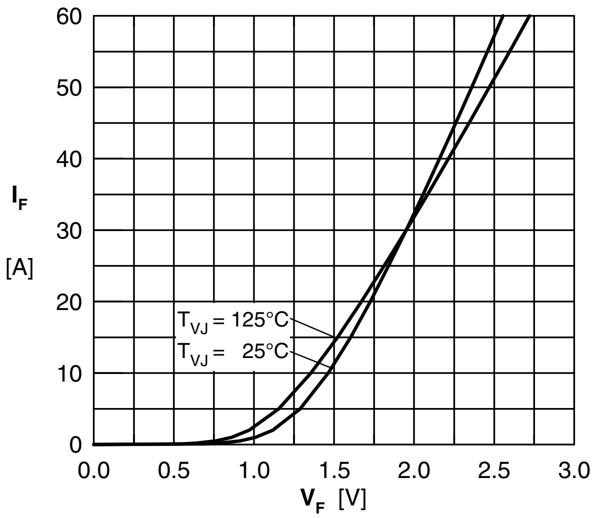


Fig. 7 Typ. Forward current versus V_F

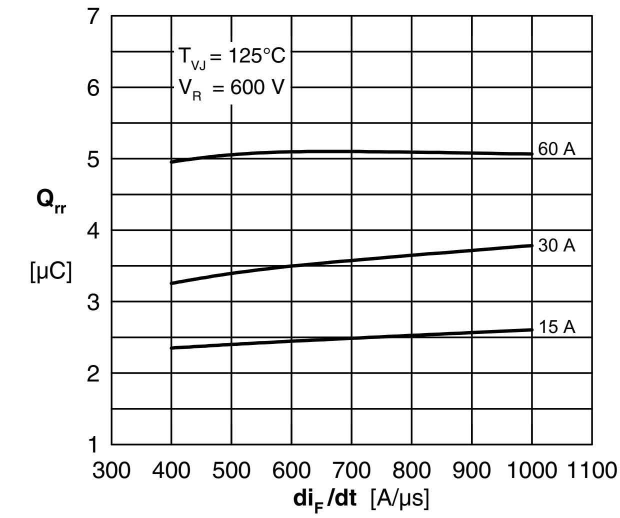


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

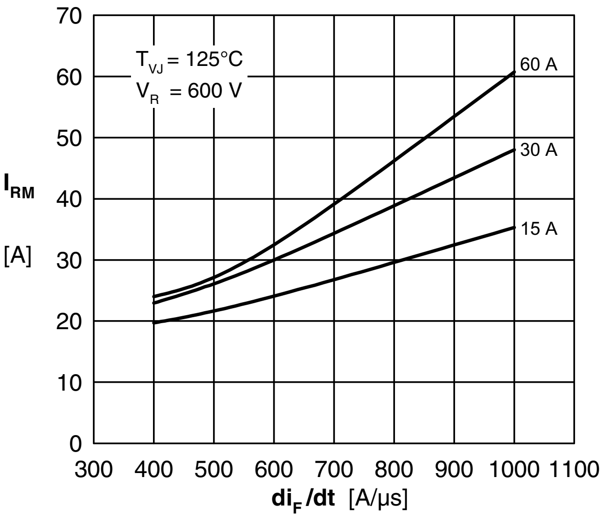


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

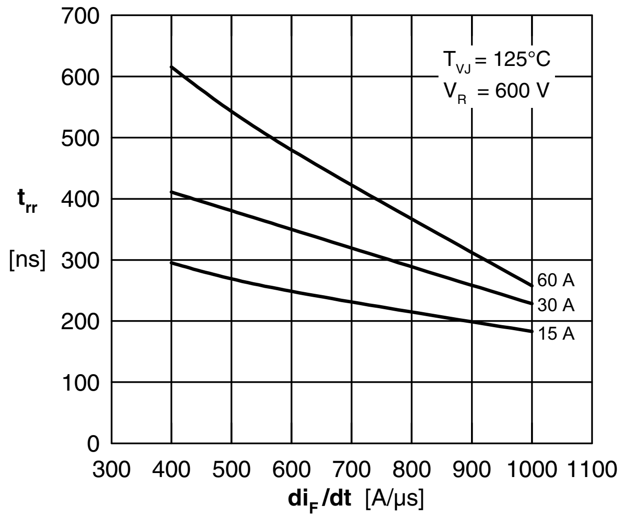


Fig.10 Typ. recovery time t_{rr} versus di/dt

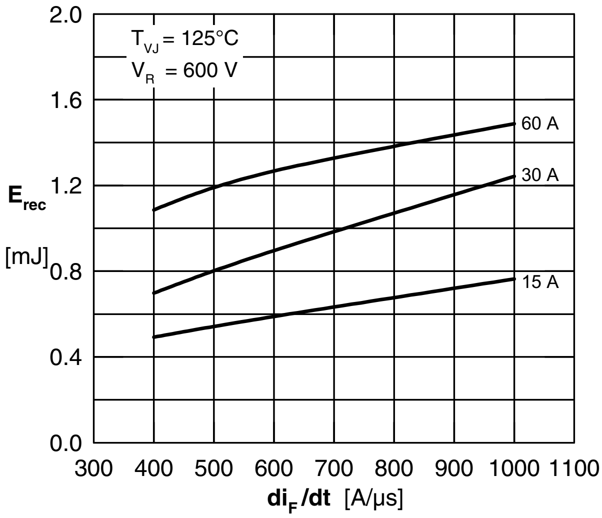


Fig.11 Typ. recovery energy E_{rec} versus di/dt