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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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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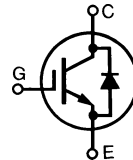


High Speed IGBT with Diode

IXSH 30 N60CD1
IXSK 30 N60CD1
IXST 30 N60CD1

Short Circuit SOA Capability

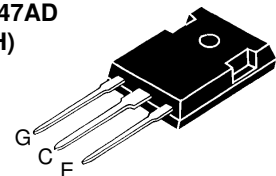
Preliminary data



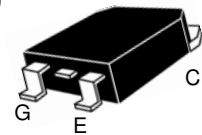
$$\begin{aligned} V_{CES} &= 600 \text{ V} \\ I_{C25} &= 55 \text{ A} \\ V_{CE(sat)} &= 2.5 \text{ V} \\ t_{fi} &= 70 \text{ ns} \end{aligned}$$

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}$	600	V
V_{CGR}	$T_J = 25^\circ\text{C to } 150^\circ\text{C}; R_{GE} = 1 \text{ M}\Omega$	600	V
V_{GES}	Continuous	± 20	V
V_{GEM}	Transient	± 30	V
I_{C25}	$T_C = 25^\circ\text{C}$	55	A
I_{C90}	$T_C = 90^\circ\text{C}$	30	A
I_{CM}	$T_C = 25^\circ\text{C}, 1 \text{ ms}$	110	A
SSOA (RBSOA)	$V_{GE} = 15 \text{ V}, T_J = 125^\circ\text{C}, R_G = 10 \Omega$ Clamped inductive load, $V_{CL} = 0.8 V_{CES}$	$I_{CM} = 60$	A
t_{SC} (SCSOA)	$V_{GE} = 15 \text{ V}, V_{CE} = 360 \text{ V}, T_J = 125^\circ\text{C}$ $R_G = 33 \Omega$, non repetitive	10	μs
P_C	$T_C = 25^\circ\text{C}$	200	W
T_J		-55 ... +150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55 ... +150	$^\circ\text{C}$
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight		6	g
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	$^\circ\text{C}$

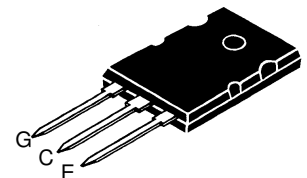
TO-247AD
(IXSH)



TO-268 (D3)
(IXST)



TO-264
(IXSK)



G = Gate C = Collector
E = Emitter TAB = Collector

Features

- International standard packages: JEDEC TO-247, TO-264 & TO-268
- Short Circuit SOA capability
- High frequency IGBT and anti-parallel FRED in one package
- New generation HDMOS™ process

Applications

- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies

Advantages

- Space savings (two devices in one package)
- Easy to mount with 1 screw (isolated mounting screw hole)
- Surface mountable, high power case style
- Reduces assembly time and cost
- High power density

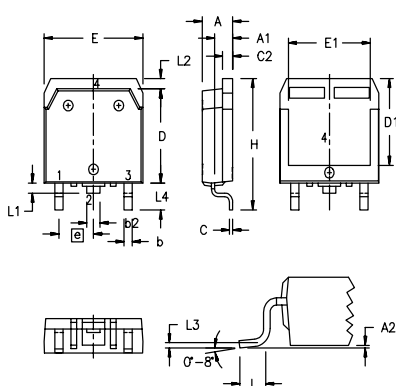
Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
BV_{CES}	$I_C = 750 \mu\text{A}, V_{GE} = 0 \text{ V}$	600		V
$V_{GE(th)}$	$I_C = 2.5 \text{ mA}, V_{CE} = V_{GE}$	4		V
I_{CES}	$V_{CE} = 0.8 \cdot V_{CES}$ $V_{GE} = 0 \text{ V}$			$T_J = 25^\circ\text{C}$ 200 μA $T_J = 125^\circ\text{C}$ 3 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$			$\pm 100 \text{ nA}$
$V_{CE(sat)}$	$V_{GE} = 15 \text{ V}$			$I_C = I_{C90}$ 2.5 V

Symbol	Test Conditions	Characteristic Values (T _J = 25°C, unless otherwise specified)		
		min.	typ.	max.
g_{fs}	I _C = I _{C90} ; V _{CE} = 10 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2 %	10		S
C_{ies}	V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz		3100	pF
C_{oes}			240	pF
C_{res}			50	pF
Q_g	I _C = I _{C90} ; V _{GE} = 15 V, V _{CE} = 0.5 V _{CES}		100	nC
Q_{ge}			30	nC
Q_{gc}			38	nC
t_{d(on)}	Inductive load, T_J = 25°C		30	ns
t_{ri}	I _C = I _{C90} ; V _{GE} = 15 V V _{CE} = 0.8 V _{CES} ; R _G = 4.7 Ω Note 1.		30	ns
t_{d(off)}			90	150 ns
t_{fi}			70	120 ns
E_{off}			0.7	1.2 mJ
t_{d(on)}	Inductive load, T_J = 125°C		35	ns
t_{ri}	I _C = I _{C90} ; V _{GE} = 15 V V _{CE} = 0.8 V _{CES} ; R _G = 4.7 Ω Note 1		35	ns
E_{on}			0.5	mJ
t_{d(off)}			150	ns
t_{fi}			140	ns
E_{off}			1.2	mJ
R_{thJC}	TO-247 TO-264		0.62 K/W	K/W
R_{thCK}		0.25		K/W
R_{thCK}		0.15		K/W

Reverse Diode (FRED)

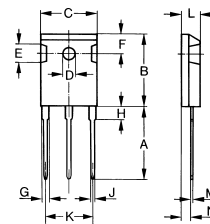
Reverse Diode (FRED)		Characteristic Values (T _J = 25°C, unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
V _F	I _F = I _{C90} , V _{GE} = 0 V Note 2	T _J = 150°C T _J = 150°C		1.7 V 2.5 V
I _{RM}	I _F = 100A; V _{GE} = 0 V; T _J = 100°C V _R = 100 V; -di _F /dt = 100 A/μs		2	2.5 A
t _{rr}	I _F = 1 A; -di/dt = 100 A/μs; V _R = 30 V	T _J = 25°C	35	50 ns
R _{thJC}				1.0 K/W

Notes: 1. Switching times may increase for $V_{CE} \text{ (Clamp)} > 0.8 \cdot V_{CES}$, higher T_J or increased R_G .
2. Pulse test, $t \leq 300 \mu s$, duty cycle $d \leq 2\%$

TO-268AA (IXST) (D³ PAK)

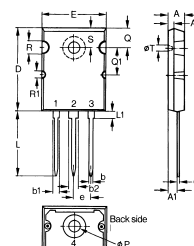
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.75	.83
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45 BSC		.215 BSC	
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L1	1.20	1.40	.047	.055
L2	1.00	1.15	.039	.045
L3	.025 BSC		.010 BSC	
L4	3.80	4.10	.150	.161

TO-247 AD (IXSH) Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

TO-264 AA (IXSK) Outline



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.020	1.030
E	19.81	19.96	.780	.786
e	5.46	BSC	.215	BSC
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

Min. Recommended Footprint

