IXYS

Advanced Technical Information

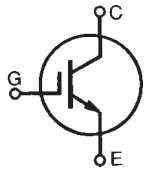
Trench IGBT

IXGA9289

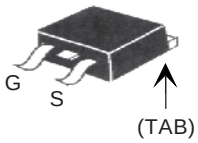
V_{CES} = 300 V
I_{C25} = 120 A
$V_{CE(sat)(typ)}$ = 1.4 V

For Plasma Display Applications

(Development type IXGA_120N30TC)



TO-263 (IXGA)



G = Gate D = Drain
S = Source TAB = Drain

Symbol	Test Conditions	Maximum Ratings	
V_{CES}	T_J = 25°C to 150°C	300	V
V_{GEM}		±30	V
I_{C25}	T_C = 25°C, IGBT chip capability	120	A
I_{C90}	T_C = 90°C	75	A
I_{CM}	$T_J \le 150°C$, tp < 300 µs	200	A
$I_{C(RMS)}$	Lead current limit	75	A
SSOA (RBSOA)	V_{GE} = 15 V, T_{VJ} = 150°C, R_G = 20 Ω Clamped inductive load, V_{CE} < 300 V	I_{CM} = 100	A
P_C	T_C = 25°C	250	W
T_J		-55 ... +150	°C
T_{JM}		150	°C
T_{stg}		-55 ... +150	°C
Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10 s		300	°C
Plastic body for 10s		260	°C
M_d	Mounting torque (TO-3P)	1.3/10	Nm/lb.in.
Weight	TO-263	3	g

Features

- International standard packages
- Trench gate construction for low $V_{CE(sat)}$
  - for minimum on-state conduction losses
- MOS Gate turn-on
  - drive simplicity

Applications

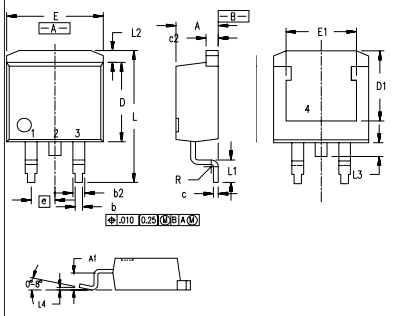
- PDP Screen Drivers
- AC motor speed control
- DC servo and robot drives
- DC choppers
- Uninterruptible power supplies (UPS)
- Switch-mode and resonant-mode power supplies
- Capacitor discharge

Symbol (T_J = 25°C, unless otherwise specified)	Test Conditions		Characteristic Values Min.	Typ.	Max.	
$V_{GE(th)}$	I_C = 250 µA, V_{CE} = V_{GE}		3.0		5.0	V
I_{CES}	V_{CE} = V_{CES}	T_J = 25°C			1	µA
	V_{GE} = 0 V	T_J = 125°C			200	µA
I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V				±200	nA
$V_{CE(sat)}$	V_{GE} = 15V, I_C = 60 A			1.4	1.8	V
	I_C = 120 A			1.7		V

© 2005 IXYS All rights reserved

Symbol	Test Conditions (T_J = 25°C, unless otherwise specified)	Characteristic Values Min.	Typ.	Max.	
g_{fs}	I_C = 60 A V_{CE} = 10 V Pulse test, t ≤ 300 µs, duty cycle ≤ 2 %	60	85		S
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		5600		pF
C_{oes}			160		pF
C_{res}			38		pF
Q_g	I_C = 60 A, V_{GE} = 15 V, V_{CE} = 0.5 V_{CES}		134		nC
Q_{ge}			34		nC
Q_{gc}			29		nC
$t_{d(on)}$	**Resistive load, T_J = 25°C** I_C = 60 A, V_{GE} = 15 V V_{CE} = 150 V, R_G = R_{off} = 5 Ω		33		ns
t_{ri}			43		ns
$t_{d(off)}$			73		ns
t_{fi}			24		ns
$t_{d(on)}$	**Resistive load, T_J = 125°C** I_C = 60 A, V_{GE} = 15 V V_{CE} = 150 V, R_G = R_{off} = 5 Ω		32		ns
t_{ri}			72		ns
$t_{d(off)}$			84		ns
t_{fi}			40		ns
R_{thJC}				0.5	K/W
R_{thCK}			0.25		K/W

TO-263 AA Outline



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029

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

IXYS MOSFETs and IGBTs are covered by one or more of the following U.S. patents: 4,835,592 4,850,072 4,881,106 4,931,844 5,017,508 5,034,796 5,049,961 5,063,307 5,187,117 5,237,481 5,381,025 5,486,715 6,162,665 6,259,123 B1 6,306,728 B1 6,404,065 B1 6,534,343 6,583,505 6,683,344 6,710,405 B2 6,710,463 6,727,585 6,759,692