

# Trench IGBT

## IXGA9289

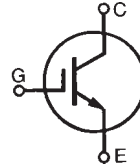
$$V_{CES} = 300 \text{ V}$$

$$I_{C25} = 120 \text{ A}$$

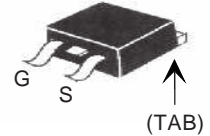
$$V_{CE(sat)(typ)} = 1.4 \text{ V}$$

### For Plasma Display Applications

(Development type IXGA\_120N30TC)



TO-263 (IXGA)



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

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

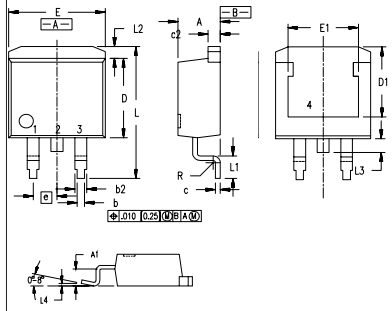
#### Applications

- 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	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$V_{GE(th)}$	$I_C = 250 \mu\text{A}$ , $V_{CE} = V_{GE}$	3.0		5.0 V
$I_{CES}$	$V_{CE} = V_{CES}$			1 $\mu\text{A}$
	$V_{GE} = 0 \text{ V}$			200 $\mu\text{A}$
$I_{GES}$	$V_{CE} = 0 \text{ V}$ , $V_{GE} = \pm 20 \text{ V}$			$\pm 200 \text{ nA}$
$V_{CE(sat)}$	$V_{GE} = 15 \text{ V}$ , $I_C = 60 \text{ A}$		1.4	1.8 V
	$I_C = 120 \text{ A}$		1.7	V

Symbol	Test Conditions ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)	Characteristic Values		
		Min.	Typ.	Max.
$g_{fs}$	$I_C = 60\text{ A}$ , $V_{CE} = 10\text{ V}$ Pulse test, $t \leq 300\ \mu\text{s}$ , duty cycle $\leq 2\%$	60	85	S
$C_{ies}$	$V_{CE} = 25\text{ V}$ , $V_{GE} = 0\text{ V}$ , $f = 1\text{ MHz}$		5600	pF
$C_{oes}$			160	pF
$C_{res}$			38	pF
$Q_g$	$I_C = 60\text{ A}$ , $V_{GE} = 15\text{ V}$ , $V_{CE} = 0.5 V_{CES}$		134	nC
$Q_{ge}$			34	nC
$Q_{gc}$			29	nC
$t_{d(on)}$	<b>Resistive load, <math>T_J = 25^\circ\text{C}</math></b> $I_C = 60\text{ A}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 150\text{ V}$ , $R_G = R_{off} = 5\ \Omega$		33	ns
$t_{ri}$			43	ns
$t_{d(off)}$			73	ns
$t_{fi}$			24	ns
$t_{d(on)}$	<b>Resistive load, <math>T_J = 125^\circ\text{C}</math></b> $I_C = 60\text{ A}$ , $V_{GE} = 15\text{ V}$ $V_{CE} = 150\text{ V}$ , $R_G = R_{off} = 5\ \Omega$		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		Inches	
	Min.	Max.	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	4,931,844	5,049,961	5,237,481	6,162,665	6,404,065B1	6,683,344	6,727,585
	4,850,072	5,017,508	5,063,307	5,381,025	6,259,123B1	6,534,343	6,710,405B2	6,759,692
	4,881,106	5,034,796	5,187,117	5,486,715	6,306,728 B1	6,583,505	6,710,463	