

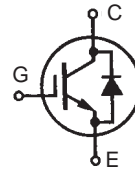
# NPT<sup>3</sup> IGBT with Diode in ISOPLUS 247™

## IXER 35N120D1

$$I_{C25} = 50 \text{ A}$$

$$V_{CES} = 1200 \text{ V}$$

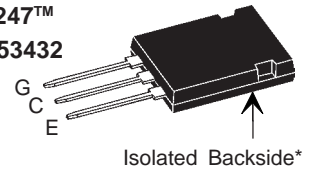
$$V_{CE(sat)typ.} = 2.2 \text{ V}$$



ISOPLUS 247™



E153432



G = Gate    C = Collector    E = Emitter

\*Patent pending

IGBT		
Symbol	Conditions	Maximum Ratings
$V_{CES}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	1200 V
$V_{GES}$		$\pm 20$ V
$I_{C25}$	$T_C = 25^{\circ}\text{C}$	50 A
$I_{C90}$	$T_C = 90^{\circ}\text{C}$	32 A
$I_{CM}$ $V_{CEK}$	$V_{GE} = \pm 15 \text{ V}; R_G = 39 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	50 A
		$V_{CES}$
$t_{SC}$ (SCSOA)	$V_{CE} = 900\text{V}; V_{GE} = \pm 15 \text{ V}; R_G = 39 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10 $\mu\text{s}$
$P_{tot}$	$T_C = 25^{\circ}\text{C}$	200 W

### Features

- NPT<sup>3</sup> IGBT
  - low saturation voltage
  - positive temperature coefficient for easy paralleling
  - fast switching
  - short tail current for optimized performance in resonant circuits
- HiPerFRED™ diode
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- ISOPLUS 247™ package
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - high reliability
  - industry standard outline

### Applications

- single switches
- choppers with complementary free wheeling diodes
- phaselegs, H bridges, three phase bridges e.g. for
  - power supplies, UPS
  - AC, DC and SR drives
  - induction heating

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 35 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.2 2.6		V V
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{CE}$	4.5		6.5 V
$I_{CES}$	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.4		0.4 mA mA
$I_{GES}$	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			200 nA
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$ $E_{on}$ $E_{off}$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 35 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 39 \Omega$	150		ns
		60		ns
		700		ns
		50		ns
		4.2		mJ
		3.5		mJ
$C_{ies}$	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$	2		nF
$Q_{Gon}$	$V_{CE} = 600 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 30 \text{ A}$	250		nC
$R_{thJC}$ $R_{thJH}$		1.2		0.6 KW KW

**Diode**

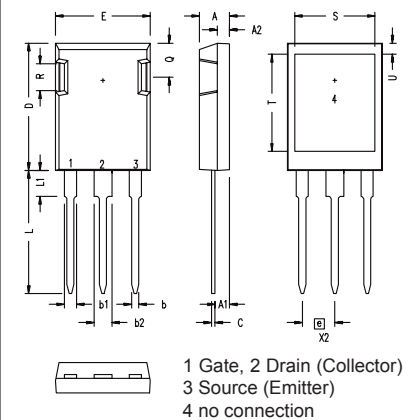
Symbol	Conditions	Maximum Ratings	
$I_{F25}$	$T_C = 25^\circ\text{C}$	48	A
$I_{F90}$	$T_C = 90^\circ\text{C}$	25	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 35\text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	2.5	2.9	V
$I_{RM}$ $t_{rr}$	} $I_F = 30\text{ A}; di_F/dt = -500\text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C}$ $V_R = 600\text{ V}; V_{GE} = 0\text{ V}$	27		A
		150		ns
$R_{thJC}$ $R_{thJH}$	(per diode)	2.6	1.3	K/W K/W

**Component**

Symbol	Conditions	Maximum Ratings	
$T_{VJ}$		-55...+150	$^\circ\text{C}$
$T_{stg}$		-55...+125	$^\circ\text{C}$
$V_{ISOL}$	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}$	2500	V~
$F_c$	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$C_p$	coupling capacity between shorted pins and mounting tab in the case		30	pF
<b>Weight</b>			6	g

**ISOPLUS 247 OUTLINE**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	.190	.205
A <sub>1</sub>	2.29	2.54	.090	.100
A <sub>2</sub>	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b <sub>1</sub>	1.91	2.13	.075	.084
b <sub>2</sub>	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	.780	.800
L1	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190
S	13.21	13.72	.520	.540
T	15.75	16.26	.620	.640
U	1.65	3.03	.065	.080

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Datasheets for electronic components.