

Fast IGBT Chopper

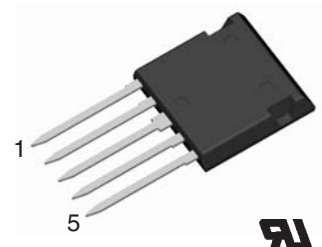
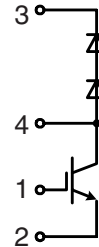
in ISOPLUS i4-PAC™

$$I_{C25} = 38 \text{ A}$$

$$V_{CES} = 600 \text{ V}$$

$$V_{CE(sat) \text{ typ.}} = 1.9 \text{ V}$$

Preliminary data



IGBT				
Symbol	Conditions	Maximum Ratings		
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V	
V_{GES}		± 20	V	
I_{C25}	$T_C = 25^{\circ}\text{C}$	38	A	
I_{C90}	$T_C = 90^{\circ}\text{C}$	24	A	
I_{CM} V_{CEK}	$V_{GE} = \pm 15 \text{ V}; R_G = 10 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	110 V_{CES}	A	
t_{SC} (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 10 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	μs	
P_{tot}	$T_C = 25^{\circ}\text{C}$	125	W	

Features

- NPT IGBT technology
 - low switching losses for high frequency operation
 - no latch up
 - positive temperature coefficient for easy paralleling
- HiPerDyn™ FRED
 - consisting of series connected diodes
 - enhanced dynamic behaviour for high frequency operation
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - low coupling capacity between pins and heatsink
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability
 - industry standard outline
 - UL registered E 72873

Applications

- boost chopper for power factor correction
- supply of high frequency transformer
 - switched mode power supplies
 - welding converters

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 25 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1.9 2.2	2.4 V
$V_{GE(th)}$	$I_C = 0.7 \text{ mA}; V_{GE} = V_{CE}$	3		5 V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1	0.04 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, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 300 \text{ V}; I_C = 25 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 10 \Omega$		30 50 320 70 1.1 0.6	ns ns ns ns mJ mJ
C_{ies}			1.6	nF
Q_{Gon}			140	nC
R_{thJC} R_{thJH}			2.0	1.0 K/W K/W
				(with heat transfer paste)

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

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Diodes (data for series connection)

Symbol	Conditions	Maximum Ratings	
V_{RRM}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
I_{F25}	$T_C = 25^{\circ}\text{C}$	35	A
I_{F90}	$T_C = 90^{\circ}\text{C}$	20	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 25 \text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.8	3.7	V
I_R	$V_R = V_{RRM}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.1	0.1	mA
I_{RM} t_{rr}	$I_F = 15 \text{ A}; di_F/dt = -400 \text{ A}/\mu\text{s}; T_{VJ} = 125^{\circ}\text{C}$ $V_R = 300 \text{ V}; V_{GE} = 0 \text{ V}$	8	50	A ns
R_{thJC} R_{thJH}	(per diode)	2.3	1.2	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		40	pF
d_S, d_A	pin - pin	1.7		mm
d_S, d_A	pin - backside metal	5.5		mm
Weight		9		g

Dimensions in mm (1 mm = 0.0394")

