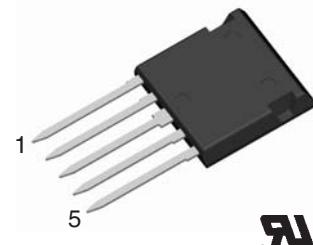
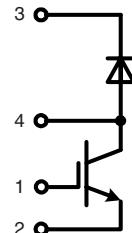


IGBT Boost Chopper

in ISOPLUS i4-PAC™

I_{C25} = 65 A
 V_{CES} = 600 V
 $V_{CE(sat)\text{ typ.}}$ = 1.6 V

Preliminary data



IGBT

Symbol	Conditions	Maximum Ratings		
V_{CES}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
V_{GES}		± 20		V
I_{C25}	$T_C = 25^\circ\text{C}$	65		A
I_{C90}	$T_C = 90^\circ\text{C}$	40		A
I_{CM}	$V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$; $T_{VJ} = 125^\circ\text{C}$	100		A
V_{CEK}	RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	V_{CES}		
t_{sc} (SCSOA)	$V_{CE} = V_{CES}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$; $T_{VJ} = 125^\circ\text{C}$ non-repetitive	10		μs
P_{tot}	$T_C = 25^\circ\text{C}$	200		W

Symbol	Conditions	Characteristic Values		
		($T_{VJ} = 25^\circ\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 30 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	1.6	2.0	V
		1.8		V
$V_{GE(\text{th})}$	$I_C = 1 \text{ mA}$; $V_{GE} = V_{CE}$	4.5		V
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		0.1	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, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 300 \text{ V}$; $I_C = 30 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$	50 60 300 30 1.0 1.4		ns ns ns ns mJ mJ
C_{ies} Q_{Gon}	$V_{CE} = 25 \text{ V}$; $V_{GE} = 0 \text{ V}$; $f = 1 \text{ MHz}$ $V_{CE} = 300 \text{ V}$; $V_{GE} = 15 \text{ V}$; $I_C = 50 \text{ A}$	2.8 120		nF nC
R_{thJC} R_{thJH}	with heat transfer paste	1.2	0.6	K/W K/W

Features

- NPT IGBT
 - low saturation voltage with positive temperature coefficient
 - fast switching
 - wide safe operating area
- HiPerFRED™ diode
 - fast reverse recovery
 - low operating forward voltage
 - low leakage current
- 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

- medium frequency power supplies
 - boost chopper for power factor correction
 - transformer primary switch
- drives: supply of
 - switched reluctance machines
 - armature or excitation winding of DC machines
 - excitation winding of synchronous machines

Diode

Symbol	Conditions	Maximum Ratings		
V_{RRM}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	600		V
I_{F25}	$T_c = 25^\circ\text{C}$	52		A
I_{F90}	$T_c = 90^\circ\text{C}$	31		A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 30 \text{ A}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	2.2 1.5	2.6 V	V
I_R	$V_R = V_{RRM}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	0.3	0.3 mA mA	
I_{RM} t_{rr}	$\left. \begin{array}{l} I_F = 30 \text{ A}; dI_F/dt = -500 \text{ A}/\mu\text{s}; T_{VJ} = 125^\circ\text{C} \\ V_R = 300 \text{ V}; V_{GE} = 0 \text{ V} \end{array} \right\}$	15 70	A ns	
R_{thJC} R_{thJH}	with heatsink compound	2.6	1.3 K/W K/W	

Component

Symbol	Conditions	Maximum Ratings		
T_{VJ}		-55...+150		°C
T_{stg}		-55...+125		°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")