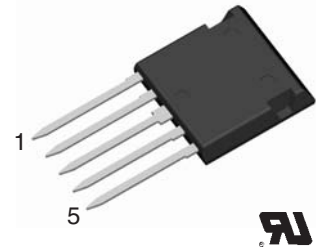
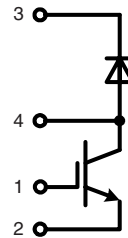


# IGBT Chopper

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
$V_{GES}$		$\pm 20$	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	A
		$V_{CES}$	
$t_{SC}$ (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 10 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	$\mu\text{s}$
$P_{tot}$	$T_C = 25^{\circ}\text{C}$	125	W

### Features

- NPT IGBT
  - low saturation voltage with positive temperature coefficient
  - low switching losses
  - 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

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	V V	
$V_{GE(th)}$	$I_C = 0.7 \text{ mA}; V_{GE} = V_{CE}$	3		5 V	
$I_{CES}$	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.04	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	
$C_{ies}$		$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		1.6	nF
$Q_{Gon}$		$V_{CE} = 300 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 15 \text{ A}$		140	nC
$R_{thJC}$ $R_{thJH}$		with heatsink compound		2.0	1.0 K/W K/W

### 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	
$V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	600	V
$I_{F25}$	$T_C = 25^{\circ}\text{C}$	30	A
$I_{F90}$	$T_C = 90^{\circ}\text{C}$	16	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 25\text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.5	2.8	V
$I_R$	$V_R = V_{RRM}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.1	0.1	mA
$I_{RM}$ $t_{rr}$	} $I_F = 15\text{ A}; di_F/dt = -400\text{ A}/\mu\text{s}; T_{VJ} = 125^{\circ}\text{C}$ $V_R = 300\text{ V}; V_{GE} = 0\text{ V}$	7		A
		50		ns
$R_{thJC}$ $R_{thJH}$	with heatsink compound	4.6	2.3	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")**
