

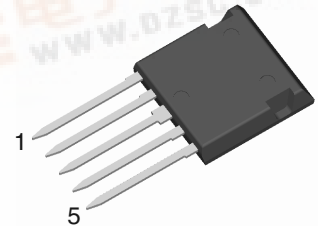
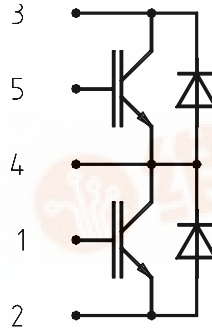


Advanced Technical Information

Fast IGBT Chopper
in ISOPLUS i4-PAC™

FII 30-12D

$I_{C25} = 30 \text{ A}$
 $V_{CES} = 1200 \text{ V}$
 $V_{CE(sat) \text{ typ.}} = 2.3 \text{ V}$



IGBT

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	1200	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	30	A
I_{C90}	$T_C = 90^{\circ}\text{C}$	18	A
I_{CM} V_{CEK}	$V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	35	A
		V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = V_{CES}; V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	125	W

Features

- NPT IGBT
 - low saturation voltage
 - no latch up
 - positive temperature coefficient for easy paralleling
- HiPerFRED™ diode
 - fast reverse recovery
 - low operating forward voltage
 - low leakage current
- ISOPLUS i4-PAC™ package
 - isolated back surface
 - enlarged creepage towards heatsink
 - application friendly pinout
 - low inductive current path
 - high reliability
 - industry standard outline

Symbol **Conditions** **Characteristic Values**
($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)

		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 20 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	2.3	3.0	V	
$V_{GE(th)}$	$I_C = 0.6 \text{ mA}; V_{GE} = V_{CE}$	4.5	6.5	V	
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.9	0.9	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, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 20 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 82 \Omega$	100	75	ns	
		500	70	ns	
		3.0	2.4	mJ	
		3.0	2.4	mJ	
C_{ies}		$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$	1000	70	pF
Q_{Gon}		$V_{CE} = 600 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 18 \text{ A}$	70		nC
R_{thJC}			1.0	K/W	

Applications

- single phaseleg
 - buck-boost chopper
- H bridge
 - power supplies
 - induction heating
 - four quadrant DC drives
 - controlled rectifier
- three phase bridge
 - AC drives
 - controlled rectifier



Diodes

Symbol	Conditions	Maximum Ratings	
V_{RRM}	$T_{VJ} = 25^{\circ}\text{C}$ to 150°C	1200	V
I_{F25}	$T_C = 25^{\circ}\text{C}$	25	A
I_{F90}	$T_C = 90^{\circ}\text{C}$	15	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 20\text{ A}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.5 1.9	V V
I_{RM} t_{rr}	$I_F = 15\text{ A}$; $di_p/dt = -400\text{ A}/\mu\text{s}$; $T_{VJ} = 125^{\circ}\text{C}$ $V_R = 600\text{ V}$; $V_{GE} = 0\text{ V}$		16 130	A ns
R_{thJC}	(per diode)			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 Hz	2500	V~
F_C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d_{S1}, d_A	pin - pin	1.7		mm
d_{S2}, d_A	pin - backside metal	5.5		mm
R_{thCH}	with heatsink compound		0.15	K/W
Weight			9	g

Dimensions in mm (1 mm = 0.0394")
