

Boost Chopper

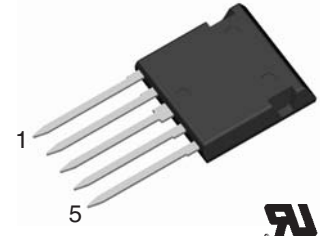
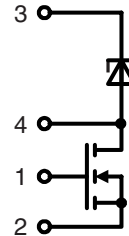
with Trench Power MOSFET
and Schottky Diode
in ISOPLUS i4-PAC™

$$I_{D25} = 100 \text{ A}$$

$$V_{DSS} = 55 \text{ V}$$

$$R_{DSon}(typ.) = 3.8 \text{ m}\Omega$$

Preliminary data



MOSFET		
Symbol	Conditions	Maximum Ratings
V_{DSS}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	55 V
V_{GS}		± 20 V
I_{D25}	$T_C = 25^{\circ}\text{C}$	150 A
I_{D90}	$T_C = 90^{\circ}\text{C}$	110 A

Features

- trench MOSFET
 - very low on state resistance R_{DSon}
 - fast switching
- Schottky diode
 - low forward voltage
 - extremely fast switching
 - blocking capability optimized for elevated temperature
- 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.
R_{DSon}	$V_{GS} = 10 \text{ V}; I_D = I_{D90}$		3.8	4.9 m Ω
V_{GSth}	$V_{DS} = 20 \text{ V}; I_D = 1 \text{ mA}$	2		4 V
I_{DSS}	$V_{DS} = 55 \text{ V}; V_{GS} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.1	1 μA mA
I_{GSS}	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			0.2 μA
Q_g Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}; V_{DS} = 44 \text{ V}; I_D = 25 \text{ A}$		86 18 25	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 30 \text{ V};$ $I_D = 25 \text{ A}; R_G = 10 \Omega$		25 50 70 40	ns ns ns ns
R_{thJC} R_{thJH}	with heat transfer paste		1.5	1 K/W K/W

Applications

- automotive
 - choppers - replacing series resistors for DC drives, heating etc.
 - control of SR drives
 - DC-DC converters
 - electronic switches -replacing relays and fuses
- power supplies
 - DC-DC converters
 - solar inverters
- battery supplied systems
 - choppers for drives in hand held tools
 - battery chargers

Schottky Diode

Symbol	Conditions	Maximum Ratings	
V_{RRM}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	45	V
I_{F25}	$T_C = 25^{\circ}\text{C}$	110	A
I_{F90}	$T_C = 90^{\circ}\text{C}$	75	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
V_F	$I_F = 40\text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.7	0.9 V V
I_R	$V_R = V_{RRM}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1	0.5 mA mA
R_{thJC} R_{thJH}	with heatsink compound		1.9	1.5 K/W K/W

Component

Symbol	Conditions	Maximum Ratings	
I_{RMS}	per pin	75	A
T_{VJ} T_{stg}		-55...+175 -55...+125	$^{\circ}\text{C}$ $^{\circ}\text{C}$
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")

