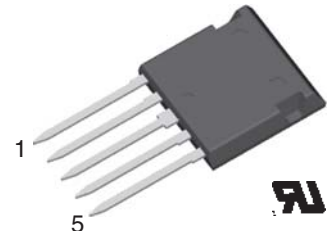
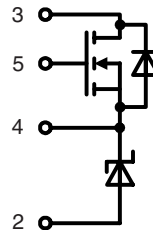


# Buck Chopper with Trench Power MOSFET and Schottky Diode

in ISOPLUS i4-PAC™

 $I_{D25} = 100 \text{ A}$   
 $V_{DSS} = 55 \text{ V}$   
 $R_{DSon \text{ typ.}} = 5.7 \text{ m}\Omega$ 

Preliminary data



MOSFET		
Symbol	Conditions	Maximum Ratings
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	55 V
$V_{GS}$		$\pm 20$ V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	100 A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	80 A

### Features

- trench MOSFET
  - very low on state resistance  $R_{DSon}$
  - fast switching
- Schottky diode
  - low forward voltage drop
  - fast switching
- 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.
$R_{DSon}$	$V_{GS} = 10 \text{ V}; I_D = I_{D90}$		5.7	7.2 mΩ
$V_{GSth}$	$V_{DS} = 20 \text{ V}; I_D = 1 \text{ mA}$	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	0.01 mA mA
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$			0.1 μA
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10 \text{ V}; V_{DS} = 14 \text{ V}; I_D = 50 \text{ A}$		100	nC
			22	nC
			36	nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10 \text{ V}; V_{DS} = 30 \text{ V}$ $I_D = 25 \text{ A}; R_G = 10 \Omega$		35	ns
			115	ns
			230	ns
			155	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
$I_{F90}$	$T_C = 90^{\circ}\text{C}$	80	A

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$V_F$	$I_F = 50 \text{ A}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		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
$R_{thJC}$				1.5 KW
$R_{thJH}$	with heat transfer paste		1.9	KW

**Component**

Symbol	Conditions	Maximum Ratings	
$I_{RMS}$	per pin	75	A
$T_{VJ}$		-55...+175	$^{\circ}\text{C}$
$T_{stg}$		-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
$d_{S1}, d_A$	pin - pin	1.7		mm
$d_{S1}, d_A$	pin - backside metal	5.5		mm
Weight			9	g

**Dimensions in mm (1 mm = 0.0394")**
