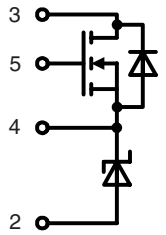
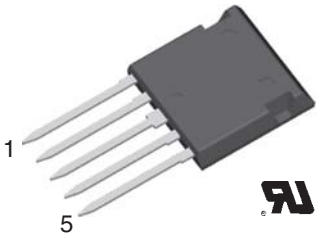
Buck Chopper
with Trench Power MOSFET and Schottky Diode
in ISOPLUS i4-PAC™

Preliminary data

I_{D25} = 100 A
V_{DSS} = 55 V
$R_{DSon\,typ.}$ = 5.7 mΩ





MOSFET

Symbol	Conditions	Maximum Ratings	
V_{DSS}	T_{VJ} = 25°C to 150°C	55	V
V_{GS}		±20	V
I_{D25}	T_C = 25°C	100	A
I_{D90}	T_C = 90°C	80	A

Symbol	Conditions (T_{VJ} = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; I_D = I_{D90}		5.7	7.2	mΩ
V_{GSth}	V_{DS} = 20 V; I_D = 1 mA	2		4	V
I_{DSS}	V_{DS} = 55V; V_{GS} = 0 V; T_{VJ} = 25°C			0.01	mA
	T_{VJ} = 125°C		0.1		mA
I_{GSS}	V_{GS} = ±20 V; V_{DS} = 0 V			0.1	µA
Q_g	V_{GS} = 10 V; V_{DS} = 14 V; I_D = 50A		100		nC
Q_{gs}			22		nC
Q_{gd}			36		nC
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 30 V		35		ns
t_r	I_D = 25A; R_G = 10 Ω		115		ns
$t_{d(off)}$			230		ns
t_f			155		ns
R_{thJC}				1	K/W
R_{thJH}	with heat transfer paste		1.5		K/W

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

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°C to 150°C	45	V
I_{F25}	T_C = 25°C	110	A
I_{F90}	T_C = 90°C	80	A

Symbol	Conditions	Characteristic Values min.	typ.	max.	
V_F	I_F = 50 A; T_{VJ} = 25°C			0.9	V
	T_{VJ} = 125°C		0.7		V
I_R	$V_R = V_{RRM}$; T_{VJ} = 25°C			0.5	mA
	T_{VJ} = 125°C		1		mA
R_{thJC}				1.5	K/W
R_{thJH}	with heat transfer paste		1.9		K/W

Component

Symbol	Conditions	Maximum Ratings	
I_{RMS}	per pin	75	A
T_{VJ}		-55...+175	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq$ 1 mA; 50/60 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")