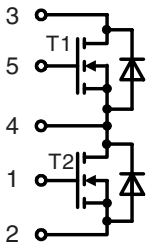
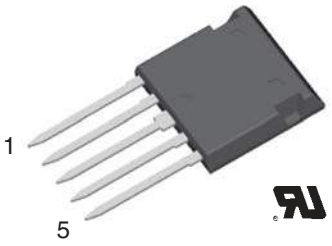
Trench Power MOSFET

Phaseleg Topology
in ISOPLUS i4-PAC™

I_{D25} = 300 A
V_{DSS} = 55 V
$R_{DSon\,typ.}$ = 2.7 mΩ

Preliminary data





MOSFET T1/T2

Symbol	Conditions	Maximum Ratings	
V_{DSS}	T_{VJ} = 25°C to T_{VJmax}	55	V
V_{GS}		±20	V
I_{D25}	T_C = 25°C	300	A
I_{D90}	T_C = 90°C	220	A
I_{F25}	(body diode) T_C = 25°C	240	A
I_{F90}	(body diode) T_C = 90°C	150	A

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; I_D = 150 A		2.7	3.6	mΩ
V_{GSth}	V_{DS} = 20 V; I_D = 2 mA	2		4	V
I_{DSS}	V_{DS} = 55 V; V_{GS} = 0 V; T_{VJ} = 25°C			2	µA
	T_{VJ} = 125°C		0.2		mA
I_{GSS}	V_{GS} = ±20 V; V_{DS} = 0 V			200	nA
Q_g	V_{GS}= 10 V; V_{DS} = 44 V; I_D = 50 A		172		nC
Q_{gs}			36		nC
Q_{gd}			50		nC
$t_{d(on)}$	V_{GS}= 10 V; V_{DS} = 30 V		25		ns
t_r	I_D = 50 A; R_G = 4.7 Ω		50		ns
$t_{d(off)}$			70		ns
t_f			40		ns
V_F	(body diode) I_F = 150 A; V_{GS} = 0 V		1.1	1.5	V
t_{rr}	(body diode) I_F = 40A; -di/dt = 200A/µs; V_{DS} = 30V		100		ns
R_{thJC}				0.5	K/W
R_{thJH}	with heat transfer paste		1		K/W

Features

- trench MOSFET
  - very low on state resistance R_{DSon}
  - 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
  - AC drives - starter generator for 12/14 V etc.
  - choppers - replacing series resistors for DC drives, heating etc.
  - DC-DC converters - between 12V and 42V system etc.
  - electronic switches -replacing relays and fuses
- power supplies
  - DC-DC converters
  - solar inverters
  - converters for fuel cells
- battery supplied systems
  - choppers or inverters for drives in hand held tools
  - battery chargers

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.	
$R_{pin-chip}$			0.5		mΩ
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")