

Description

This MOSFETS use advanced trench technology and design to provide excellent RDS(on) with low gate charge. It can be used in a wide variety of applications.

Features

BVDSS	ID
1000V	25A

- 1) Low gate charge.
- 2) Green device available.
- 3) Advanced high cell density trench technology for ultra RDS(ON)
- 4) Excellent package for good heat dissipation.



TO-220

Absolute Maximum Ratings $T_c=25^{\circ}\text{C}$, unless otherwise noted

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance ,Junction to Case1	1.0	° C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	45	

Package Marking and Ordering Information

Part NO.	Marking	Package
TYN1025	TYN1025	TO-220

KERSEMI ELECTRONIC CO.,LTD.
1000V

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		$T_c = 100^\circ\text{C}$ 25	A
$T_{(AV)}$	Average on-state current (180° conduction angle)		$T_c = 100^\circ\text{C}$ 16	A
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	$T_j = 25^\circ\text{C}$ 314	A
		$t_p = 10 \text{ ms}$		
$I^2 t$	$I^2 t$ Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^\circ\text{C}$ 450	A^2S
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$	$T_j = 125^\circ\text{C}$ 50	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	$t_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$ 4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ\text{C}$ 1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$
V_{RGM}	Maximum peak reverse gate voltage		5	V

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions		Value	Unit	
I_{GT}	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$	MIN.	4	mA	
		MAX.	40		
V_{GT}		MAX.	1.3	V	
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$	$T_j = 125^\circ\text{C}$	MIN.	0.2	V
I_H	$I_T = 500 \text{ mA}$ Gate open		MAX.	50	mA
I_L	$I_G = 1.2 I_{GT}$		MAX.	90	mA
dV/dt	$V_D = 67 \% V_{DRM}$ Gate open	$T_j = 125^\circ\text{C}$	MIN.	1000	$\text{V}/\mu\text{s}$
V_{TM}	$I_{TM} = 50 \text{ A}$ $t_p = 380 \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.6	V
V_{IO}	Threshold voltage	$T_j = 125^\circ\text{C}$	MAX.	0.77	V
R_d	Dynamic resistance	$T_j = 125^\circ\text{C}$	MAX.	14	$\text{m}\Omega$
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX.	5	μA
		$T_j = 125^\circ\text{C}$		4	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (DC)		1.0	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient (DC)		TO-220AB	$^\circ\text{C}/\text{W}$
		$S = 1 \text{ cm}^2$	D ² PAK	

S = Copper surface under tab

PRODUCT SELECTOR

Part Number	Voltage (xxx)			Sensitivity	Package
	600 V	800 V	1000 V		
TN2540-xxxG	X	X	X	40 mA	D ² PAK
TYNx25	X	X	X	40 mA	TO-220AB

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board 2OZ copper.
2. The data tested by pulse width $\leq 300\mu s$, duty cycles $\leq 2\%$
3. The EAS data shows Max.rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, i_{AS}=17.8A$
4. The power dissipation is limited by $150^{\circ}C$ junction temperature.

Typical Characteristics $T_J=25^{\circ}C$ unless otherwise noted

Fig. 1: Maximum average power dissipation versus average on-state current.

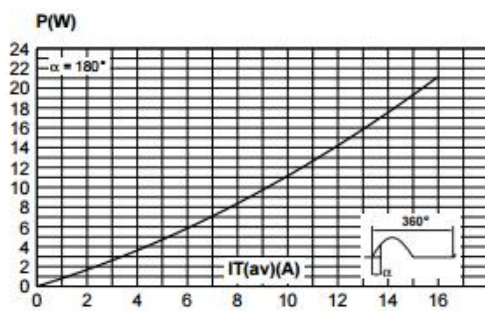


Fig. 2-1: Average and D.C. on-state current versus case temperature.

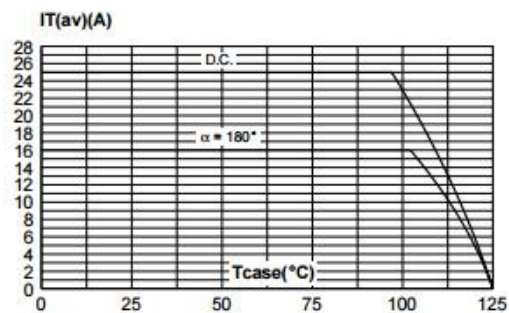


Fig. 2-2: Average and D.C. on-state current versus ambient temperature (copper surface under tab: $S = 1\text{ cm}^2$ (for D²PAK)).

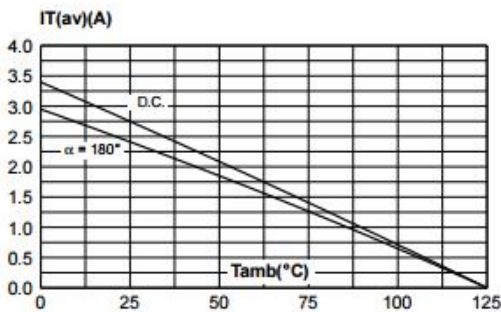


Fig. 3: Relative variation of thermal impedance versus pulse duration.

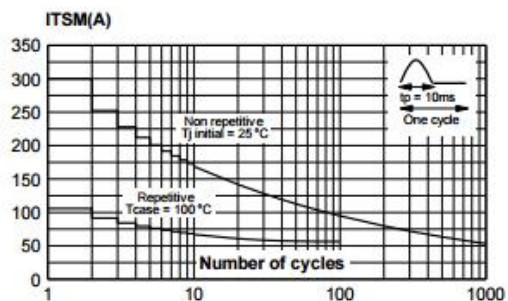
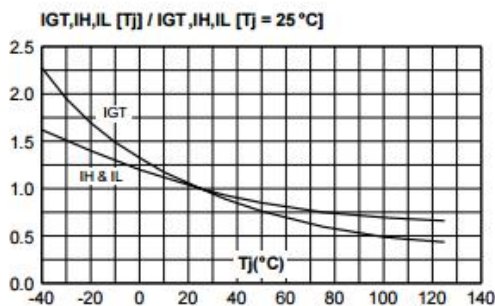
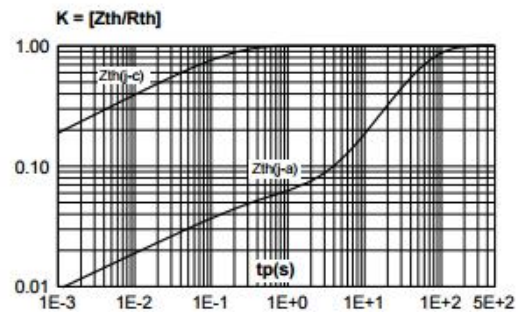


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding values of I^2t .

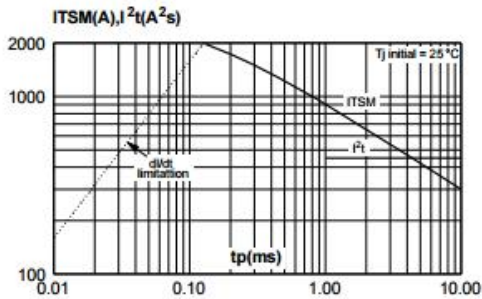


Fig. 7: On-state characteristics (maximum values).

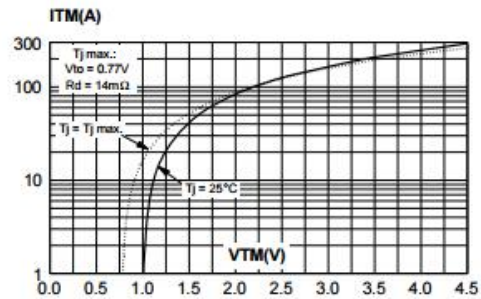


Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μ m) (D²PAK).

