

TPDV640 ---> TPDV1240

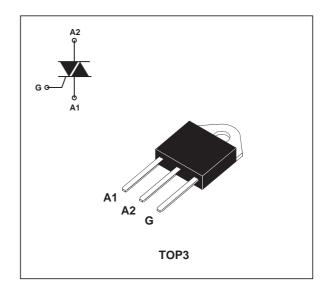
ALTERNISTORS

FEATURES

- High commutation: > 142A/ms (400Hz)
- Insulating voltage = 2500V_(RMS)
 (UL Recognized: EB81734)
- High voltage capability: V_{DRM} = 1200V

DESCRIPTION

The TPDV640 ---> TPDV1240 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)



	ABSOLUTE	RATINGS	(limiting values)	1
--	----------	---------	-------------------	---

Symbol	Parameter			Unit
I _{T(RMS)}	RMS on-state current (360° conduction angle)	e current (360° conduction angle) Tc = 75°C		
I _{TSM}	Non repetitive surge peak on-state current tp =		590	А
(Tj initial = 25°C)	tp = 8.3ms	370		
			350	
l ² t	l ² t value tp = 10ms			A ² s
dl/dt	Critical rate of rise of on-state currentRepetitiveGate supply: $I_G = 500 \text{mA}$ $dI_G/dt = 1 \text{A}/\mu \text{s}$ $F = 50 \text{Hz}$		20	A/µs
		Non repetitive	100	
Tstg Tj	Storage and operating junction temperature range			°C
TI	Maximum lead soldering temperature during 10s at 4.5mm from case			°C

Symbol Parameter		TPDV				11
Symbol	Parameter	640	840	1040	1240	Unit
V _{DRM} V _{RRM}	Repetitive peak off-state voltage $Tj = 125^{\circ}C$	600	800	1000	1200	V

September 2001 - Ed: 1A

TPDV640 ---> TPDV1240

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Contact to ambient	50	°C/W
Rth (j-c) DC	Junction to case for DC	1.2	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F = 50Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

 $P_{G(AV)} = 1W$ $P_{GM} = 40W$ (tp = 20µs) $I_{GM} = 8A$ (tp = 20µs) $V_{GM} = 16V$ (tp = 20µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test conditions		Quadrant		Value	Unit
I _{GT}	$V_D = 12V (DC)$ $R_L = 33\Omega$	Tj = 25°C	1 - 11 - 111	MAX.	200	mA
V _{GT}	$V_{D} = 12V (DC) R_{L} = 33\Omega$	Tj = 25°C	1 - 11 - 111	MAX.	1.5	V
V _{GD}	$V_D = V_{DRM}$ $R_L = 3.3 k\Omega$	Tj =125°C	1 - 11 - 111	MIN.	0.2	V
tgt	$\label{eq:V_D} \begin{array}{l} V_D = V_{DRM} & I_G = 500 \text{mA} \\ dI_G/dt = 3\text{A}/\mu\text{s} \end{array}$	Tj = 25°C	- -	TYP.	2.5	μs
١L	$I_{G} = 1.2I_{GT}$	Tj = 25°C	-	TYP.	100	mA
			Ш		200	
I _H *	I _T = 500mA Gate open	Tj = 25°C		TYP.	50	mA
V _{TM} *	I _{TM} = 60A tp = 380µs	Tj = 25°C		MAX.	1.8	V
IDRM	V _{DRM} rated	Tj = 25°C		MAX.	0.02	mA
I _{RRM}	V _{RRM} rated	Tj = 125°C		MAX.	8	
dV/dt *	Linear slope up to $V_D = 67\% V_{DRM}$ gate open	Tj = 125°C		MIN.	500	V/µs
(dl/dt)c*	(dV/dt)c = 200V/µs	Tj = 125°C		MIN.	35	A/ms
	(dV/dt)c = 10V/µs	1			142	

57

* For either polarity of electrode A_2 voltage with reference to electrode A_1 .

Fig. 1: Maximum RMS power dissipation versus RMS on-state current (F = 50Hz).(Curves are cut off by (dl/dt)c limitation)

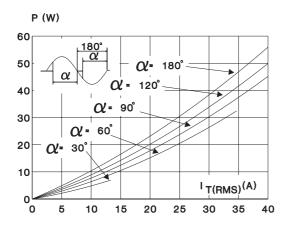


Fig. 3: RMS on-state current versus case temperature.

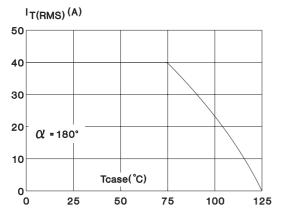
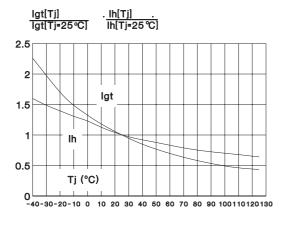


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature.



57

Fig. 2: Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.

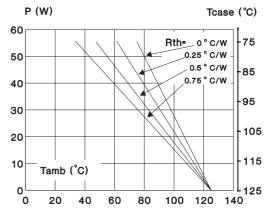


Fig. 4: Relative variation of thermal impedance versus pulse duration.

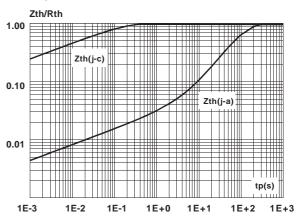
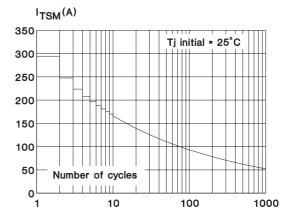


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.



TPDV640 ---> TPDV1240

Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \le 10$ ms, and corresponding value of l^2t .

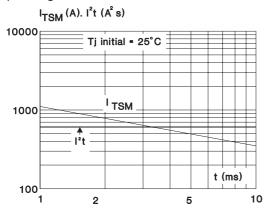


Fig. 9: Safe operating area.

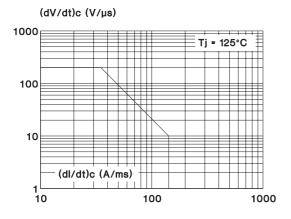
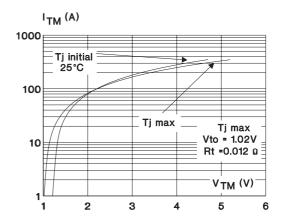


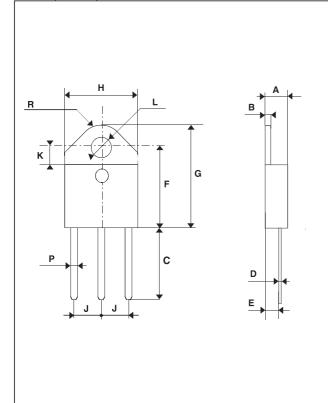
Fig. 8: On-state characteristics (maximum values).



57

PACKAGE MECHANICAL DATA

TOP3 (Plastic)



	DIMENSIONS				
REF.	Millin	Millimeters		hes	
	Min.	Max.	Min.	Max.	
А	4.4	4.6	0.173	0.181	
В	1.45	1.55	0.057	0.061	
С	14.35	15.60	0.565	0.614	
D	0.5	0.7	0.020	0.028	
E	2.7	2.9	0.106	0.114	
F	15.8	16.5	0.622	0.650	
G	20.4	21.1	0.815	0.831	
Н	15.1	15.5	0.594	0.610	
J	5.4	5.65	0.213	0.222	
К	3.4	3.65	0.134	0.144	
L	4.08	4.17	0.161	0.164	
Р	1.20	1.40	0.047	0.055	
R	4.60	Тур.	0.181 Typ.		

OTHER INFORMATION

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
TPDVx40	TPDVx40	TOP3	4.5 g	120	Bulk

- Epoxy meets UL94,V0
- Cooling method: C
- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1 m.N.

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 2001 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

http://www.st.com

