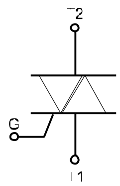
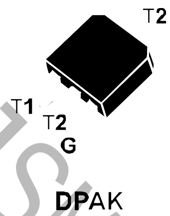




Description 4A TRIACs

Planar passivated high commutation three Quadrant triac in a (DPAK) surface-mountable plastic package. This "series B" triac balances the requirements of commutation performance and gate sensitivity and is intended for interfacing with low power drivers and logic ICs including microcontrollers.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
V_{DRM}/V_{RRM}	800	V
$I_{G(Q1)}$	10	mA

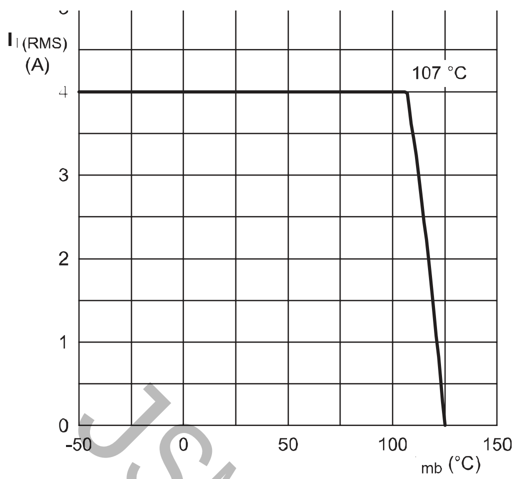
Absolute Maximum Rating

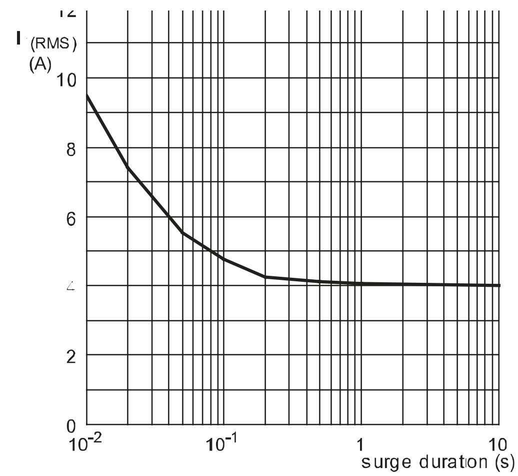
Symbol	Parameter	Conditions	Value	Unit
V_{DRM}	repetitive peak off-state voltage		800	V
I_{TSM}	non-repetitive peak on-state current	full sine wave; Tj(init) = 25 °C; tp = 20 ms; (see Fig.4,Fig.5)	25	A
		full sine wave; $T_{j(init)}$ = 25 °C; t_p = 16.7 ms	27	A
$I_{T(RMS)}$	RMS on-state current	full sine wave; Tmb ≤ 107 °C (see Fig.1, Fig.2, Fig.3)	4	A
I^2t	I^2t for fusing	t_p = 10 ms; sine-wave pulse	3.1	A^2s
dI_T/dt	rate of rise of on-state current	I_T = 6 A; I_G = 0.2 A; dI_G/dt = 0.2 A/μs;	100	A/μs
I_{GM}	peak gate current		2	A
P_{GM}	peak gate power		5	W
$P_{G(AV)}$	average gate power	over any 20 ms period	0.5	W
T_{stg}	storage temperature		-40~+150	°C
T_j	junction temperature		125	°C

Static Characteristics (Tj = 25°C, unless otherwise specified)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
I_{GT}	Gate trigger current	V_D = 12 V; I_T = 0.1 A; T2+ G+ (see Fig.7)	-	-	10	mA
		V_D = 12 V; I_T = 0.1 A; T2+ G- (see Fig.7)	-	-	10	mA
		V_D = 12 V; I_T = 0.1 A; T2- G- (see Fig.7)	-	-	10	mA
I_L	latching current	V_D = 12 V; I_G = 0.1 A; T2+ G+ (see Fig.8)	-	-	12	mA
		V_D = 12 V; I_G = 0.1 A; T2+ G- (see Fig.8)	-	-	18	mA
		V_D = 12 V; I_G = 0.1 A; T2- G- (see Fig.8)	-	-	12	mA
I_H	holding current	V_D = 12 V; (see Fig.9)	-	-	12	mA
V_T	on-state voltage	I_T = 5 A; (see Fig.10)	-	1.4	1.7	V
V_{GT}	gate trigger voltage	V_D = 12 V; I_T = 0.1 A (See Fig.11)	-	0.7	1.5	V
		V_D = 400 V; I_T = 0.1 A;Tj = 125°C(see Fig.11)	0.25	0.4	-	V
I_D	off-state current	V_D = 800 V; Tj = 125 °C	-	0.1	0.5	mA

Dynamic Characteristics (Tj = 25°C, unless otherwise specified)						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
dV_D/dt	rate of rise of off-state voltage	V_{DM} = 536 V; Tj = 125 °C exponential waveform; gate open circuit	30			V/μs
dI_{com}/dt	rate of change of commutating current	V_D = 400 V; T_j = 125 °C; $I_{T(RMS)}$ = 4 A; dV_{com}/dt = 0.1 V/μs; gate open circuit	8			A/ms
		V_D = 400 V; T_j = 125 °C; $I_{T(RMS)}$ = 4 A; dV_{com}/dt = 10 V/μs; gate open circuit	2.1			A/ms
t_{gt}	gate-controlled turn-on time	ITM = 6 A; VD = 600 V; IG = 0.1 A; dIG/dt = 5 A/μs		2		μs

Thermal Resistances						
Symbol	**Parameter**	**Conditions**	**Min**	**Typ**	**Max**	**Unit**
Rth(j-L)	thermal resistance from junction to mounting base	half cycle (see Fig.6)			3.7	K/W
		full cycle (see Fig.6)			3	K/W
Rth(j-a)	thermal resistance from junction to ambient	in free air; printed circuit board (FR4) mounted		75		K/W





f = 50 Hz, Tmb = 107 °C

Fig 1. **RMS on-state current as a function of mounting base temperature; maximum values**

Fig 2. **RMS on-state current as a function of surge duration; maximum values**

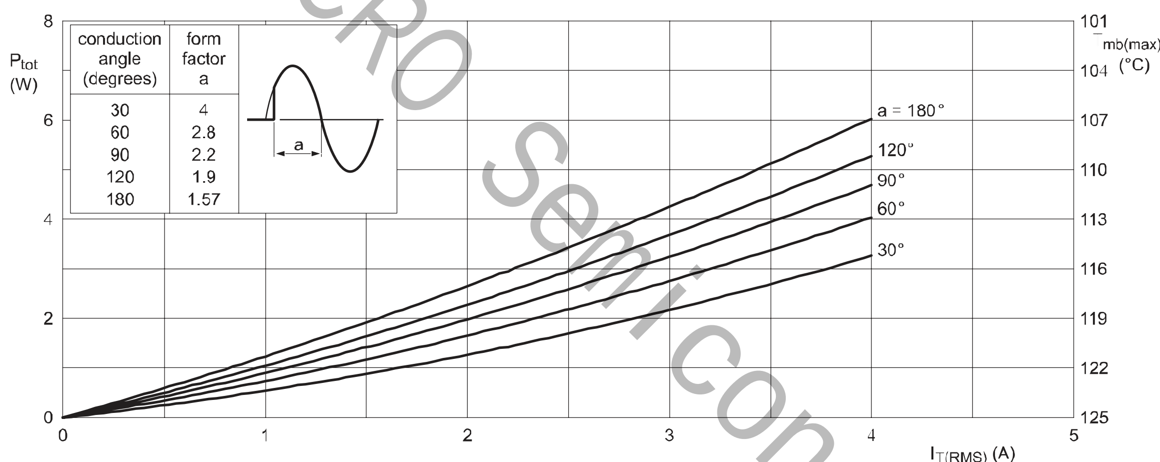
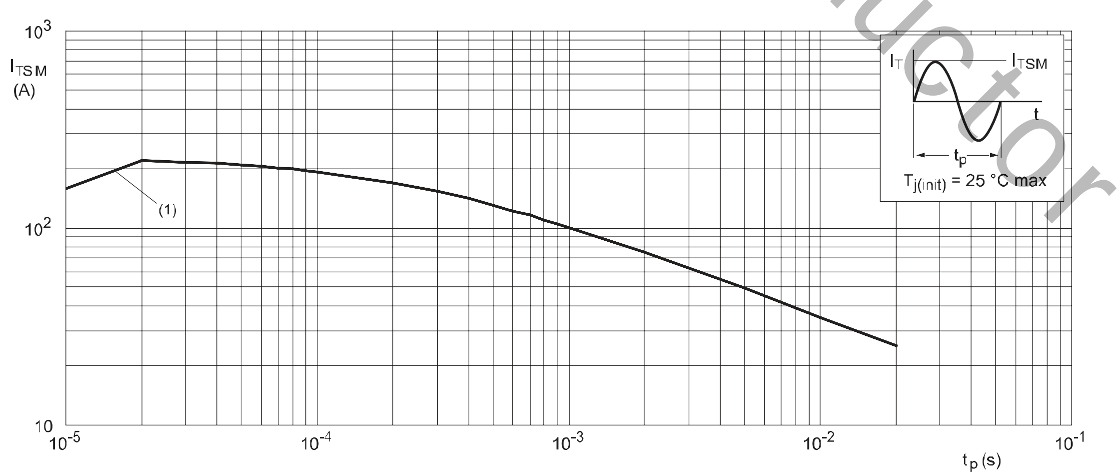
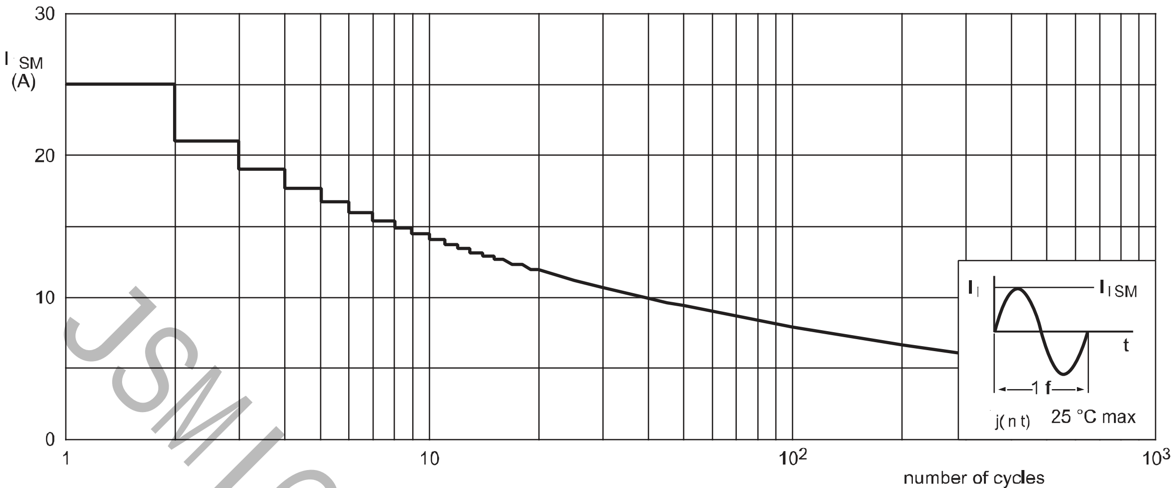


Fig 3. **Total power dissipation as a function of RMS on-state current; maximum values**



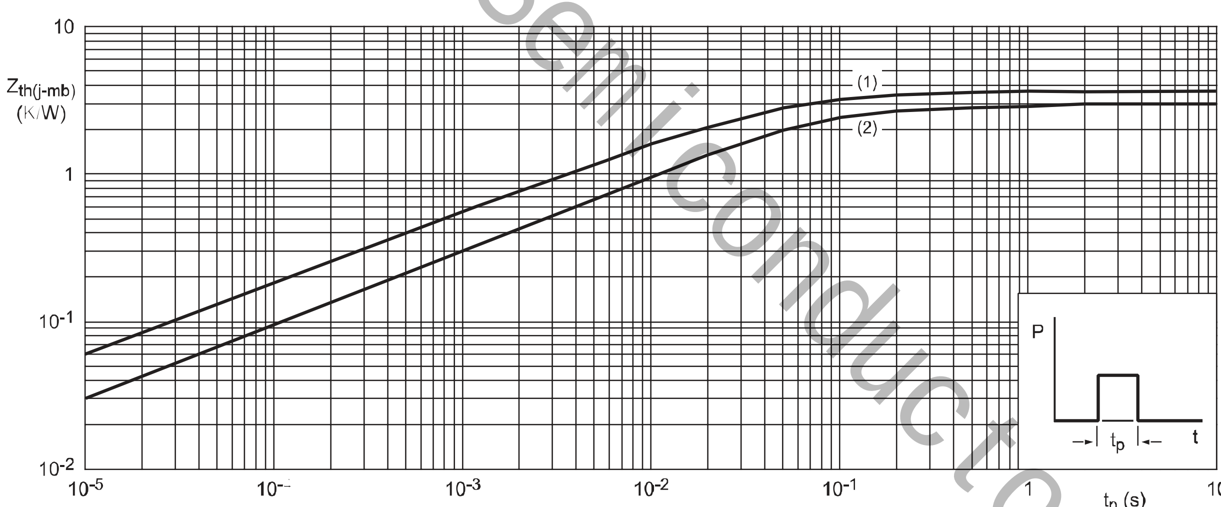
$t_p \leq 20$ ms; (1) dI_T/dt limit

Fig 4. **Non-repetitive peak on-state current as a function of pulse width; maximum values**



f = 50 Hz

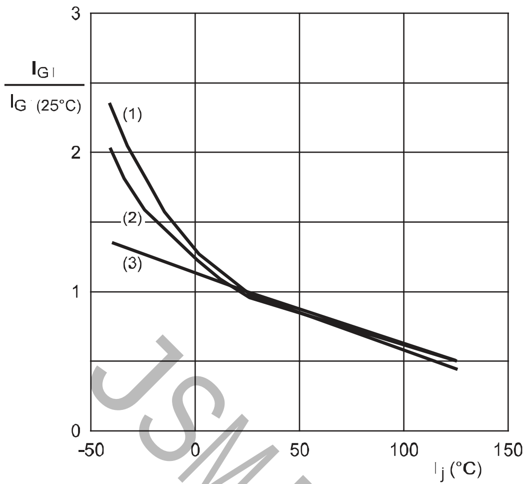
Fig 5. **Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximum values**



(1) Unidirectional (half cycle)

(2) Bidirectional (full cycle)

Fig 6. **Transient thermal impedance from junction to mounting base as a function of pulse width**



(1) T2- G-
(2) T2+ G-
(3) T2+ G+

Fig 7. **Normalized gate trigger current as a function of junction temperature**

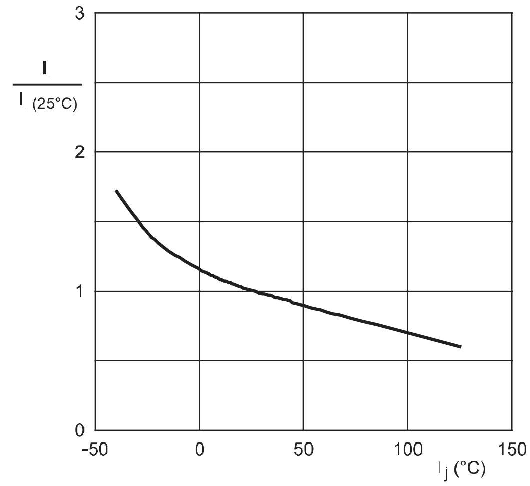


Fig 8. **Normalized latching current as a function of junction temperature**

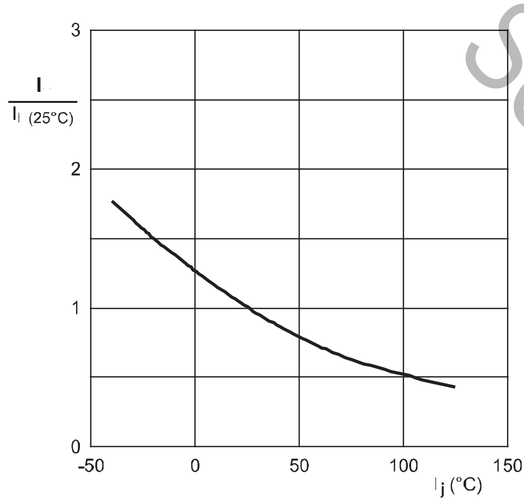
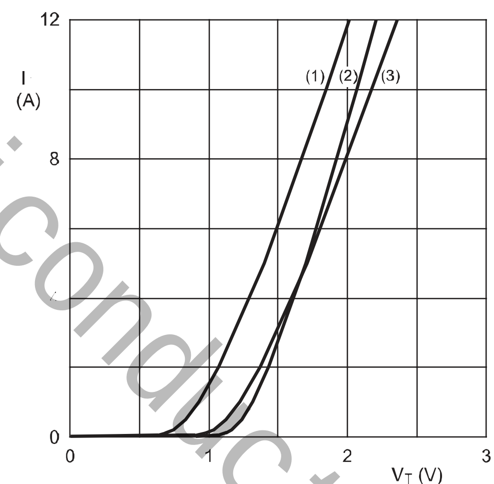


Fig 9. **Normalized holding current as a function of junction temperature**



Vo = 1.27 V; Rs = 0.091 Ω
(1) Tj = 125 °C; typical values
(2) Tj = 125 °C; maximum values
(3) Tj = 25 °C; maximum values

Fig 10. **On-state current as a function of on-state voltage**

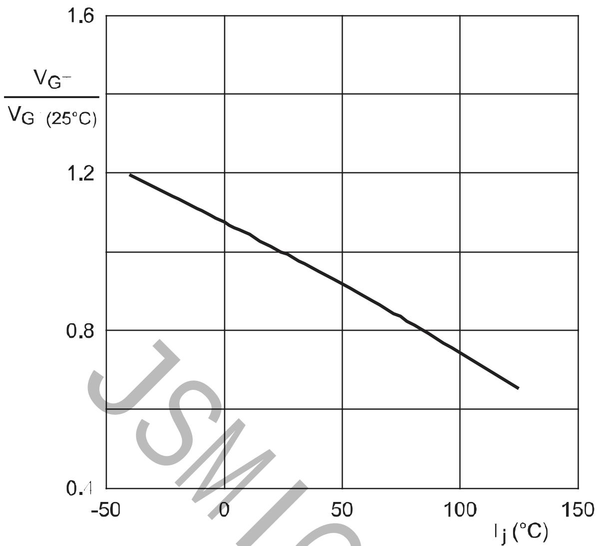
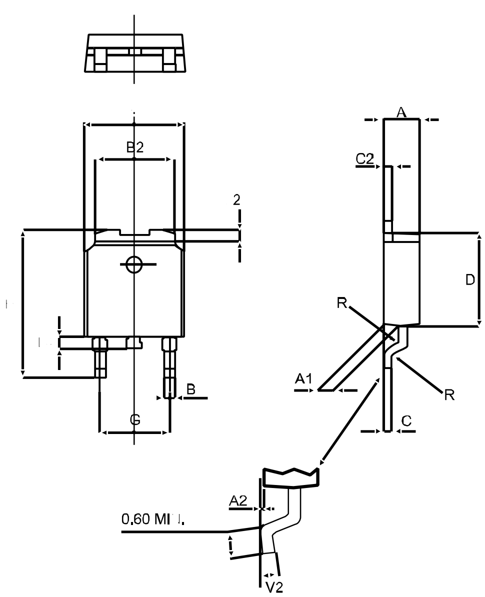


Fig 11. Normalized gate trigger voltage as a function of junction temperature

PACKAGE MECHANICAL DATA

DPAK (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
R	0.2 typ.		0.007 typ.	
V2	0°	8°	0°	8°