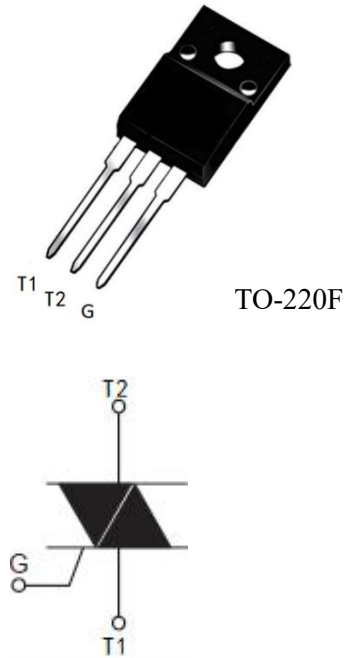


P/N: YZPST-BTA312X-600D TRIACS
●DESCRIPTION

Due to mesa technology and Glass passivation, these devices have good performance at dv/dt and reliability. The Triac series is suitable for general purpose AC switching. They can be used as high power motor control - e.g. washing machines, vacuum cleaners, and refrigeration and air conditioning compressors, electronic thermostats.


●MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600	V
I_{GT}	≤ 5	mA

●ABSOLUTE MAXIMUM RATINGS

Symbol	PARAMETER		Value	Unit
$I_{T(RMS)}$	RMS on-state current(all full sine wave)	TO-220F, $T_h \leq 61^\circ C$	12	A
I_{TSM}	non-repetitive peak on-state current (full sine wave, $T_j = 25^\circ C$)	F=50HZ, $t = 20ms$	95	A
		F=60HZ, $t = 16.7ms$	105	
I^2t	I^2t Value for fusing	$t_p = 10ms$	45	A^2S
di/dt	Repetitive rate of rise of on-state Current after triggering	$I_T = 20 A$; $I_G = 0.2 A$; $dI_G/dt = 0.2 A/\mu s$	100	$A/\mu s$
$V_{DRM} V_{RRM}$	Repetitive Peak Off-state Voltage Repetitive Peak Reverse Voltage	$T_j = 25^\circ C$	600	V
I_{GM}	Peak gate current	$t_p = 20\mu s$	2	A
P_{GM}	peak gate power		5	W
$P_{G(AV)}$	Average gate power dissipation	over any 20 ms period	0.5	W
T_{stg}	Storage junction temperature range		- 40 to +150	$^\circ C$
T_j	Operating junction temperature range		125	$^\circ C$

● STATIC CHARACTERISTICS

Symbol	Test Condition	Quadrant	Value			Unit
			MIN	TYP	MAX	
I _{GT}	V _D =12V, I _T =0.1A, T=25°C See figure8	T2+ G+			5	mA
		T2+ G-			5	
		T2- G-			5	
I _L	V _D =12V, I _T =0.1A, T=25°C See figure10	T2+ G+			10	
		T2+ G-			15	
		T2- G-			15	
I _H	V _D = 12 V; T _j = 25 °C, See figure11				10	
V _T	I _T =0.1A, T _j =25°C, See figure9		1.3	1.6		
V _{GT}	V _D =12V, I _T =0.1A, T=25°C, See figure7		0.7	1.5	V	
	V _D =400V, I _T =0.1A, T _j =125°C, See figure11	0.25	0.4			
I _D	V _D = 600 V; T _j = 125 °C		0.1	0.5	mA	

● Dynamic characteristics

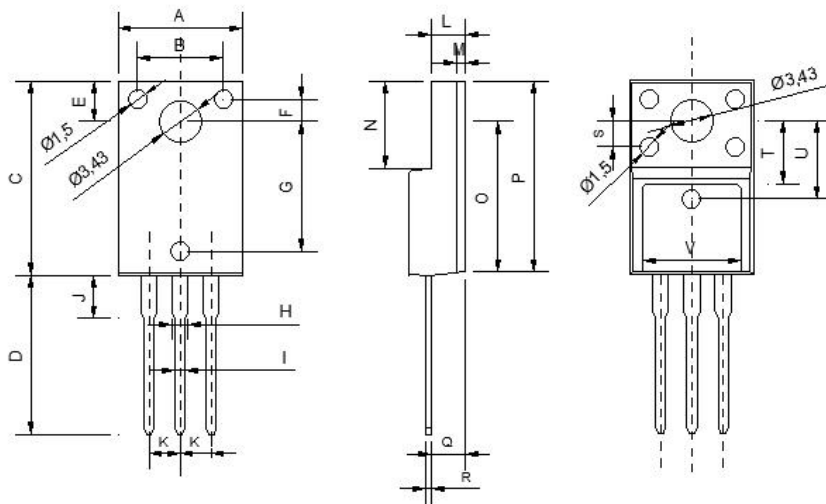
Symbol	Test Condition	Value			Unit
		MIN	TYP	MAX	
dV _D /dt	V _D M = 402 V; T _j = 125 °C; exponential waveform; gate open circuit	20			V/us
dI _{com} /dt	V _D = 400 V; T _j = 125 °C; I _T (RMS) = 12 A; dV _{com} /dt = 20 V/μs; gate open circuit; "without snubber" condition	1			A/ms
	V _D = 400 V; T _j = 125 °C; I _T (RMS) = 12 A; dV _{com} /dt = 10 V/μs; gate open circuit	1.5			A/ms
	V _D = 400 V; T _j = 125 °C; I _T (RMS) = 12 A; dV _{com} /dt = 1 V/μs; gate open circuit	4.5			A/ms
t _{gt}	I _T M = 20 A; V _D = 600 V; I _G = 0.1 A; dI _G /dt = 5 A/μs		2		us

● Thermal characteristics

Symbol	Parameter		Value		Unit
R _{th(j-h)}	thermal resistance from junction to heatsink, See figure6	full cycle; without heatsink compound	MAX	5.5	K/W
		half cycle; with heatsink compound	MAX	4.5	K/W
R _{th(j-a)}	thermal resistance from junction to ambient (in free air)		TYP	55	K/W

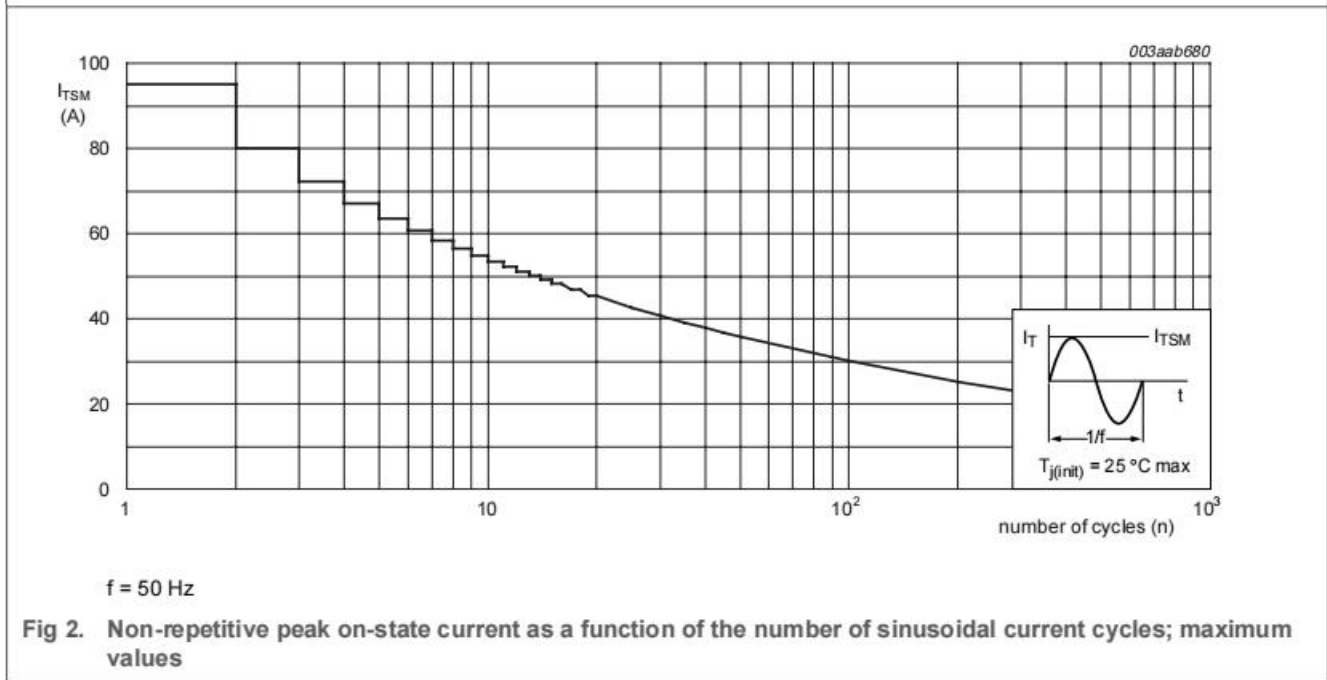
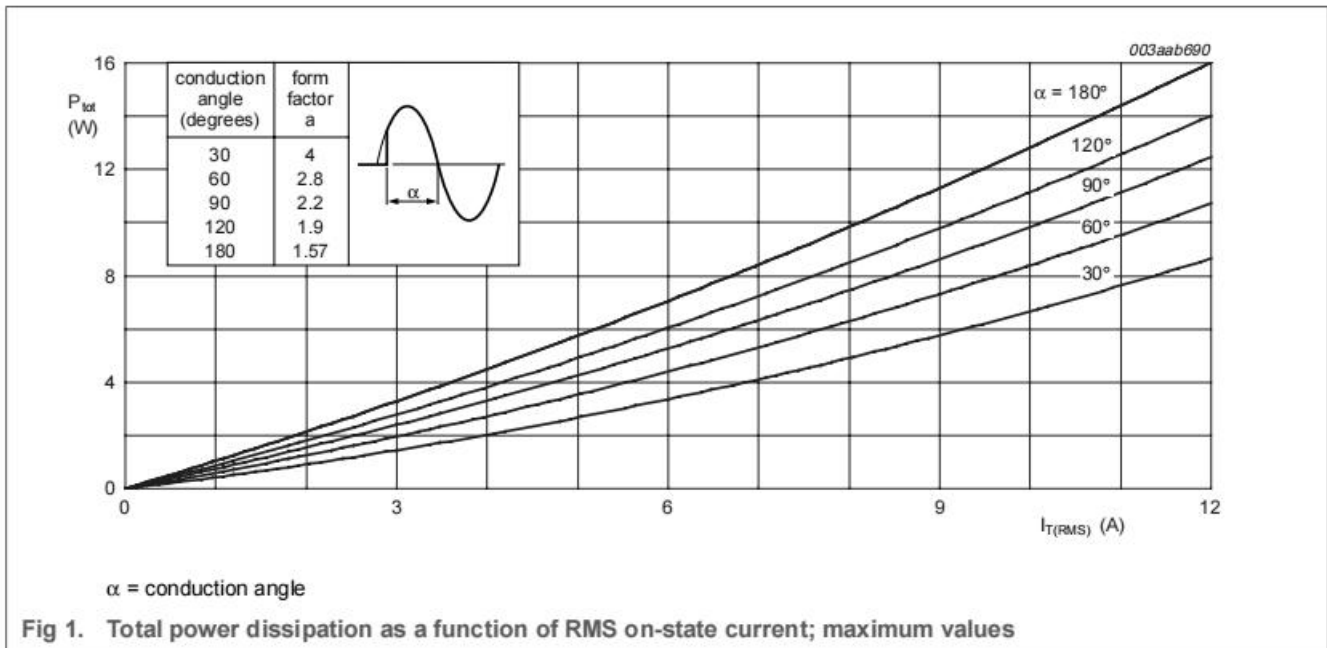
● PACKAGE MECHANICAL DATA

TO-220F



Millimeter						Inches					
Symbol	Min	Max	Symbol	Min	Max	Symbol	Min	Max	Symbol	Min	Max
A	10.06	10.26	L	2.7	2.9	A	0.396	0.404	L	0.106	0.114
B	6.95	7.05	M	0.715	0.725	B	0.274	0.278	M	0.028	0.029
C	15.82	15.92	N	7.05	7.25	C	0.623	0.627	N	0.278	0.285
D	12.8	13	O	12.47	12.67	D	0.504	0.512	O	0.491	0.499
E	3.25	3.35	P	15.77	15.97	E	0.128	0.132	P	0.621	0.629
F	1.75	1.85	Q	2.73	2.83	F	0.069	0.073	Q	0.107	0.111
G	10.55	10.65	R	0.49	0.51	G	0.415	0.419	R	0.019	0.020
H	1.26	1.3	S	2.05	2.15	H	0.050	0.051	S	0.081	0.085
I	0.81	0.83	T	4.85	4.95	I	0.032	0.033	T	0.191	0.195
J	3.5	3.56	U	6.05	6.15	J	0.138	0.140	U	0.238	0.242
K	2.53	2.55	V	7.9	8.1	K	0.100	0.100	V	0.311	0.319

● ELECTRICAL CHARACTERISTICS (CURVES)



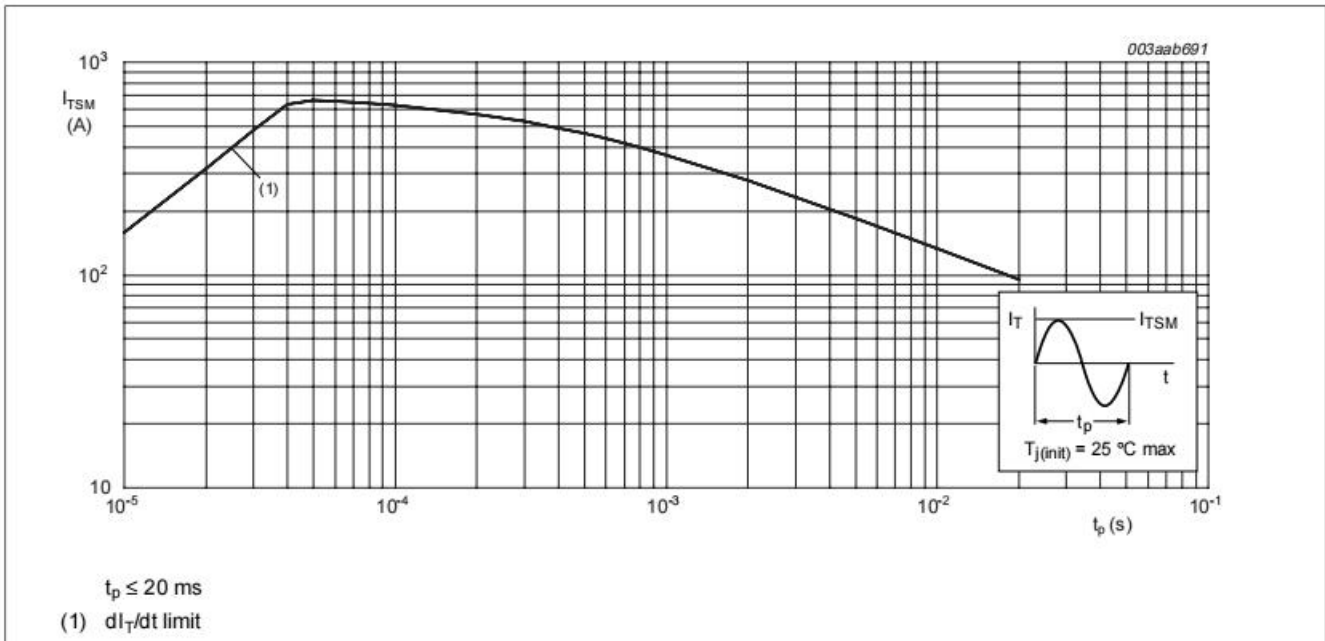


Fig 3. Non-repetitive peak on-state current as a function of pulse duration; maximum values

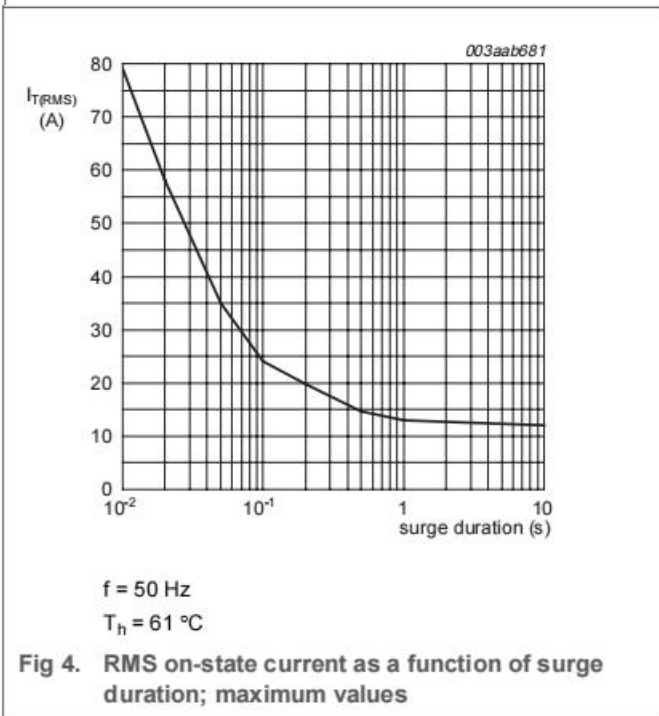


Fig 4. RMS on-state current as a function of surge duration; maximum values

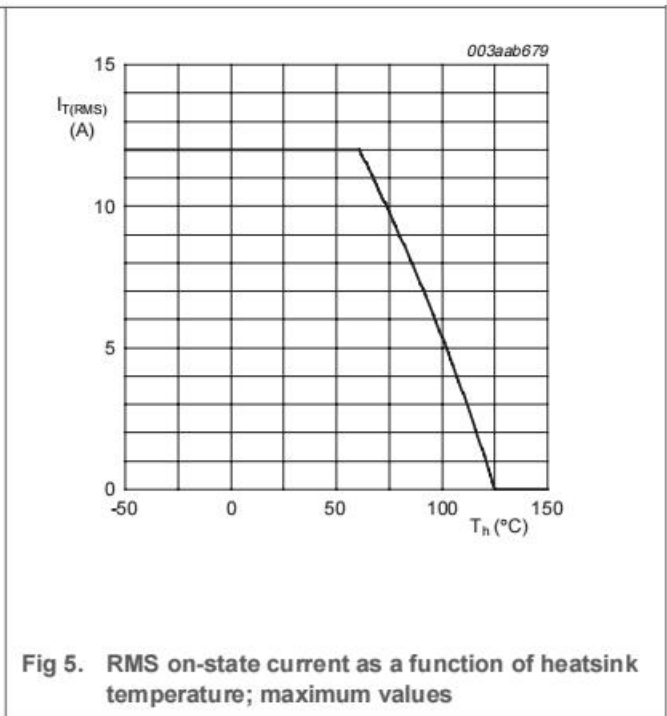
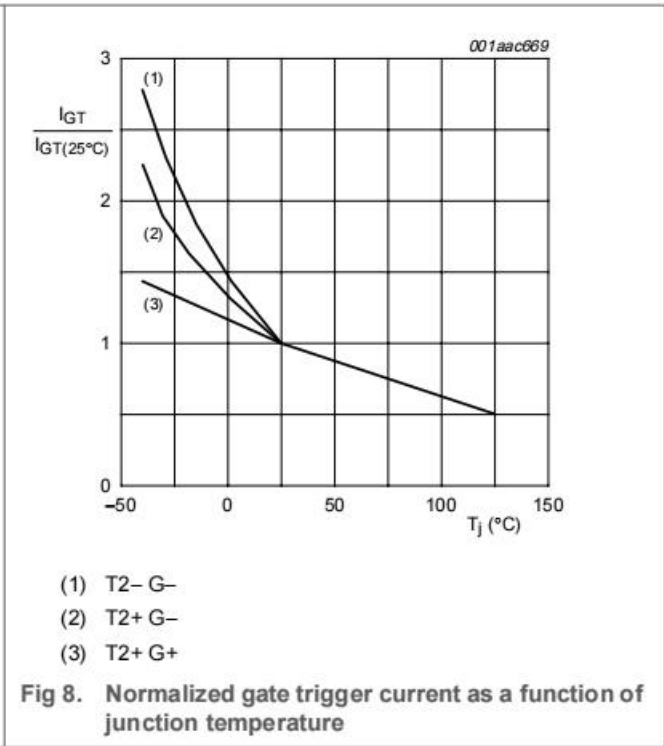
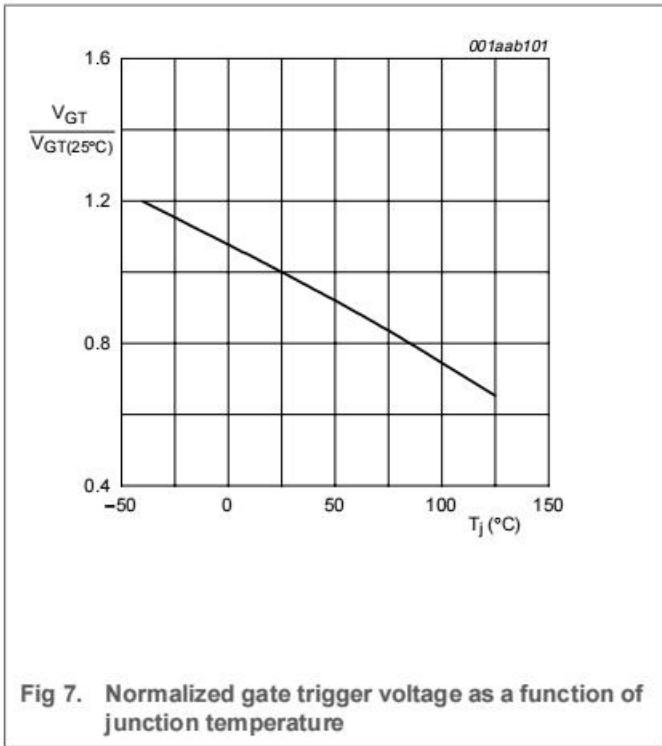
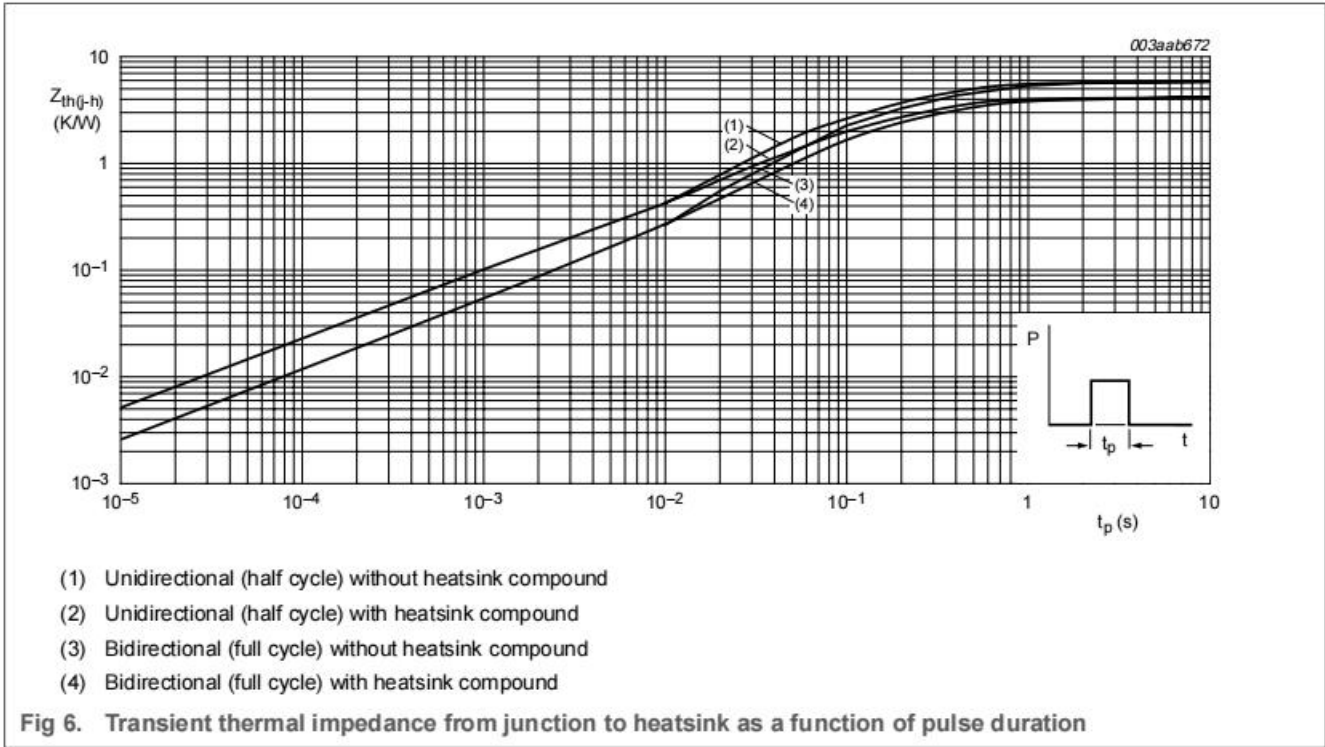
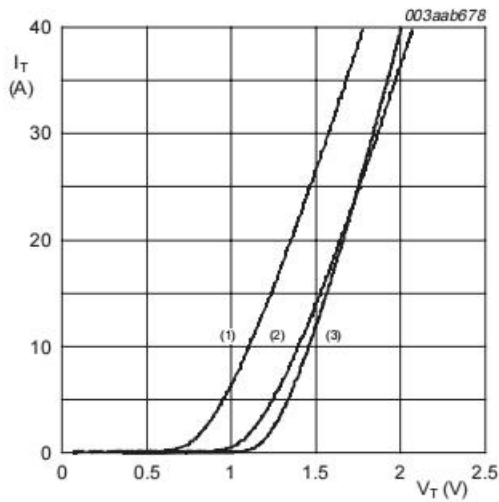


Fig 5. RMS on-state current as a function of heatsink temperature; maximum values





$V_o = 1.127\text{ V}$

$R_s = 0.027\ \Omega$

- (1) $T_j = 125\text{ }^\circ\text{C}$; typical values
- (2) $T_j = 125\text{ }^\circ\text{C}$; maximum values
- (3) $T_j = 25\text{ }^\circ\text{C}$; maximum values

Fig 9. On-state current as a function of on-state voltage

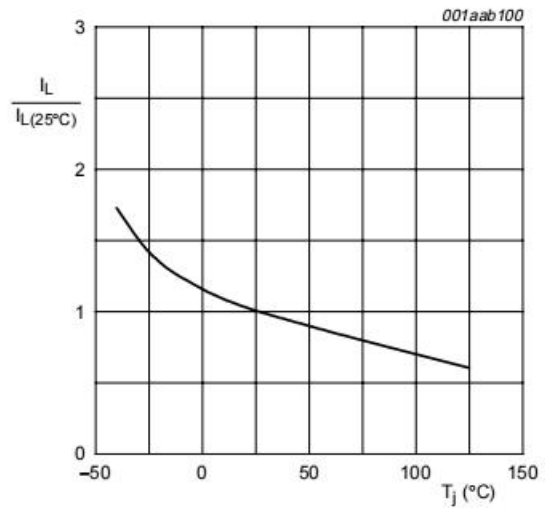


Fig 10. Normalized latching current as a function of junction temperature

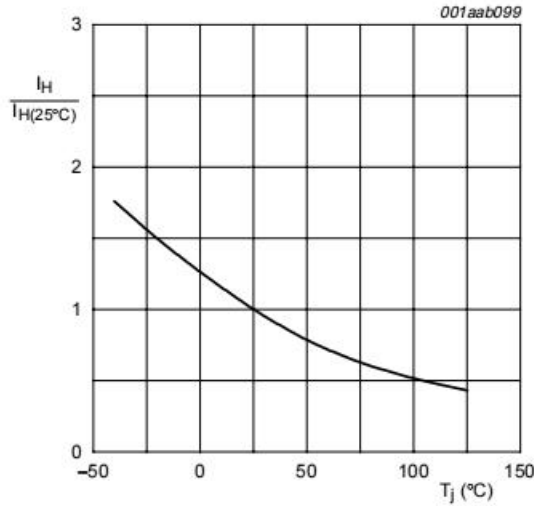


Fig 11. Normalized holding current as a function of junction temperature