

FEATURES

- Glass Passivated Junctions
- High voltage and surge capability
- Low Thermal Resistance and Durability

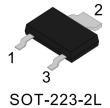
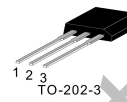
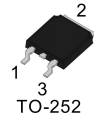
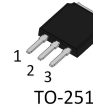
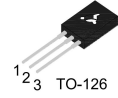
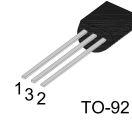
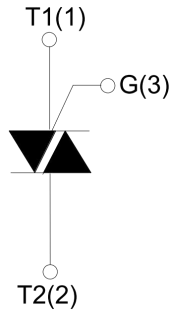
APPLICATIONS

- Static relays
- Heating regulation
- In-duction motor starting circuits
- Phase control operation in light dimmers
- Motor speed controllers



Parameters Summary

VD/VR:600/800V IT(RMS):4A IGT3:3-10mA



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	Tstg	-40 ~150	°C
Operating junction temperature range	Tj	-40~125	°C
Repetitive peak off-state voltage (T =25°C)	V _{DRM}	600/800	V
Repetitive peak reverse voltage (T =25°C)	V _{RRM}	600/800	V
Non repetitive surge peak Off-state voltage	V _{DSM}	V _{DRM} +100	V
Non repetitive peak reverse voltage	V _{RSM}	V _{RRM} +100	V
RMS on-state current	I _{T(RMS)}	4	A
Non repetitive surge peak on-state current (180° conduction angle, F=50Hz)	I _{TSM}	25	A
I ² t value for fusing (tp=10ms)	I ² t	3. 1	A ² S
Critical rate of rise of on-state current (I =2×IGT, tr ≤ 100 ns)	I - II -III	50	A/μS
	IV	10	
Peak gate current	I _{GM}	2	A
Average gate power dissipation	P _{G(AV)}	0. 5	W

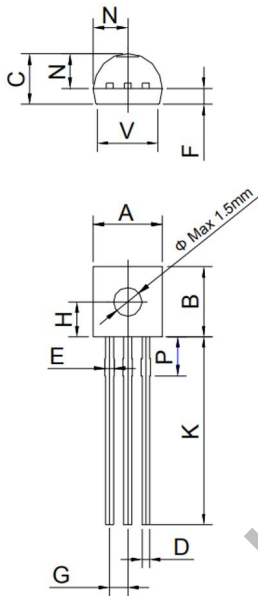
Thermal Resistances

Symbol	Parameter	Value	Unit
Rth(j-c)	Junction to case (AC)	TO-251/TO-252	3. 7
		TO-202-3	4. 5
		TO-126	4. 1
		SOT-223/SOT223-2L	10
		TO-92	15

ELECTRICAL CHARACTERISTICS (T=25°C unless otherwise specified)							
Symbol	Test Condition	Quadrant		Value			Unit
				03	05	10	
I_{GT}	$V_D=12V$	I - II - III	MAX	3	5	10	mA
		IV		5	10	25	
V_{GT}		ALL	MAX	1.3			V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^\circ C$	ALL	MIN	0.2			V
I_L	$I_G=1.2I_{GT}$	I - III-IV	MAX	8	10	20	mA
		II		12	15	35	
I_H	$I_{TM}=100mA$		MAX	5	10	20	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ C$		MIN	20	50	100	V/ μs

STATIC CHARACTERISTICS				
Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=5A$ $t_p=380\mu s$	$T_j=25^\circ C$	1.7	V
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	5	μA
I_{RRM}		$T_j=125^\circ C$	0.5	mA

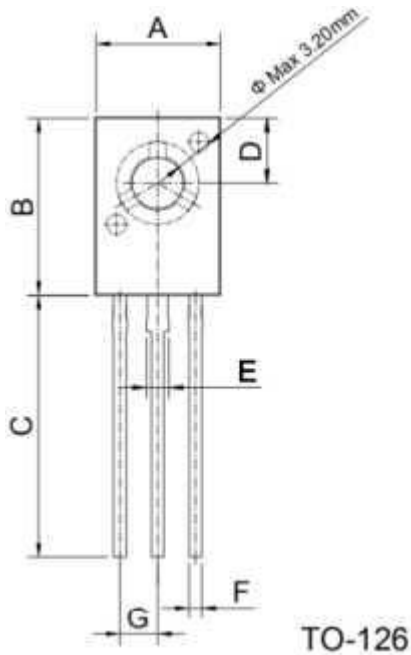
TO-92 Package Mechanical Data



TO-92

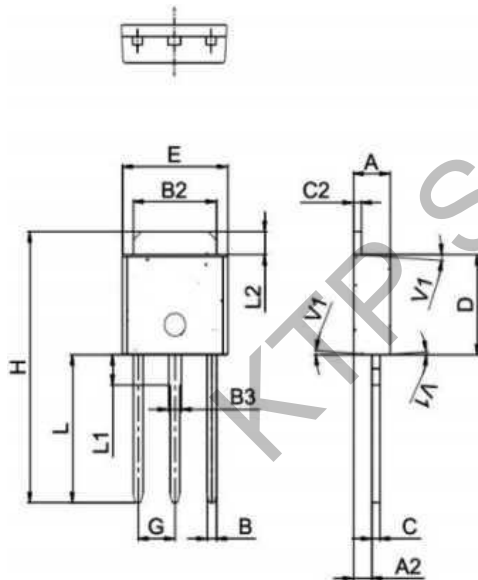
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45		5.20	0.175		0.205
B	4.32		5.33	0.170		0.210
C	3.18		4.19	0.125		0.165
D	0.41		0.51	0.016		0.020
E	0.30		0.70	0.024		0.031
F	-	1.30	-	-	0.051	-
G	-	1.27	-	-	0.050	-
H	-	2.30	-	-	0.091	-
J	0.30		0.50	0.011		0.020
K	12.70		15.0	0.500		0.591
N	2.04		2.66	0.080		0.105
P	1.86		2.06	0.073		0.081
V	-		4.50	-		0.177

TO-126 Package Mechanical Data



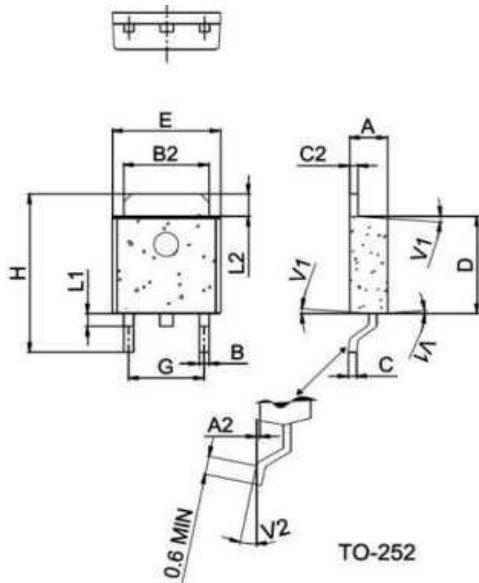
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.43	7.80	8.23	0.292	0.307	0.324
B	10.07	10.68	11.27	0.396	0.420	0.443
C	15.40	16.00	17.40	0.606	0.630	0.685
D	3.50	3.80	4.20	0.138	0.150	0.165
E	1.17	1.30	1.47	0.046	0.05	0.058
F	0.48	0.72	0.88	0.018	0.028	0.034
G		2.29			0.090	

TO-251 Package Mechanical Data



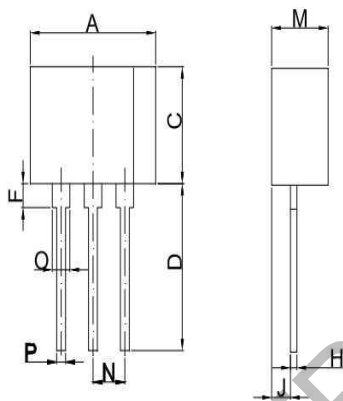
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20	2.30	2.40	0.086	0.09	0.095
A2	0.90		1.50	0.035		0.059
B	0.55	0.60	0.65	0.022	0.024	0.026
B2	5.10	5.25	5.40	0.200	0.206	0.213
B3	0.76		0.85	0.030		0.033
C	0.45	0.50	0.62	0.018	0.019	0.024
C2	0.66	0.80	0.94	0.025	0.031	0.037
D	5.80	6.00	6.20	0.228	0.236	0.244
E	6.40		6.70	0.252		0.264
G		2.30				
H	15.25	15.40	15.65	0.600	0.603	0.616
L	7.80	8.00	8.8	0.307	0.314	0.346
L1	1.50	1.70	1.90	0.059	0.066	0.075
L2	1.10	1.20	1.50	0.043	0.047	0.059
V1		4°			4°	

TO-252 Package Mechanical Data



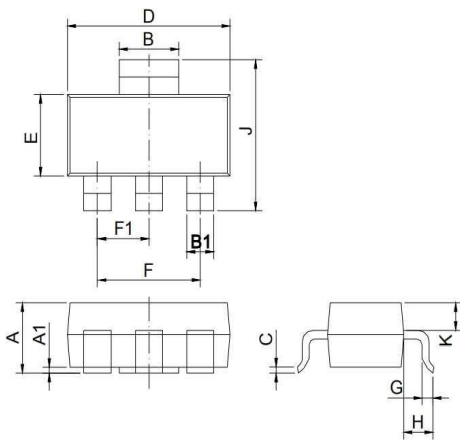
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20	2.30	2.40	0.086	0.09	0.095
A2	0.03		0.23	0.001		0.009
B	0.55	0.60	0.65	0.022	0.024	0.026
B2	5.10	5.25	5.40	0.200		0.213
C	0.45	0.50	0.62	0.018		0.024
C2	0.71	0.80	0.99	0.019		0.024
D	5.80	6.00	6.20	0.228	0.236	0.244
E	6.40	6.60	6.70	0.252		0.264
G	4.40	4.60	4.70	0.173		0.185
H	9.35	10.00	10.60	0.368		0.417
L1	0.50	0.70	0.90			
L2	0.90	1.05	1.30			
V1		7°			7°	
V2	0°		5°	0°		5°

TO-202-3 Package Mechanical Data



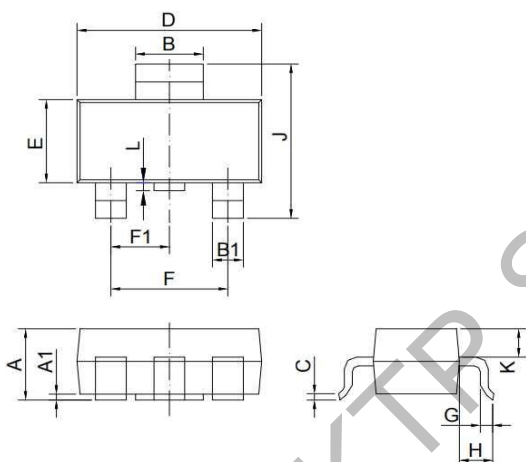
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.30	9.60	9.90	0.366	0.377	0.390
C	7.00	7.40	7.60	0.276	0.291	0.299
D	10.50	10.80	11.5	0.413	0.425	0.453
F	1.50	2.00	2.50	0.059	0.078	0.098
H	0.45	0.50	0.55	0.018	0.019	0.022
J	1.50	1.80	1.90	0.059	0.070	0.075
M	4.40	4.50	4.70	0.173	0.177	0.185
N	-	2.54	-	-	0.100	-
O	1.10	1.30	1.50	0.043	0.051	0.059
P	0.55	0.65	0.80	0.021	0.026	0.031

SOT-223 Package Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.50	1.60	1.80	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.0004	0.002	0.004
B	2.90	3.0	3.10	0.114	0.118	0.122
B1	0.60	0.70	0.8	0.024	0.028	0.031
C	0.22	0.26	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
E	3.30	3.50	3.70	0.130	0.138	0.146
F		4.6			0.181	
F1		2.3			0.091	
G	0.7	0.9	1.1	0.028	0.035	0.043
H	1.5	1.75	2	0.059	0.069	0.079
J	6.7	7.0	7.3	0.264	0.276	0.287
K		0.9			0.035	

SOT-223-2LPackage Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.50	1.60	1.80	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.0004	0.002	0.004
B	2.90	3.0	3.10	0.114	0.118	0.122
B1	0.60	0.70	0.8	0.024	0.028	0.031
C	0.22	0.26	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
E	3.30	3.50	3.70	0.130	0.138	0.146
F		4.6			0.181	
F1		2.3			0.091	
G	0.7	0.9	1.1	0.028	0.035	0.043
H	1.5	1.75	2	0.059	0.069	0.079
J	6.7	7.0	7.3	0.264	0.276	0.287
K		0.9			0.035	
L	0.05	0.1	0.12	0.002	0.004	0.005

FIG.1 Maximum power dissipation versus on-state current

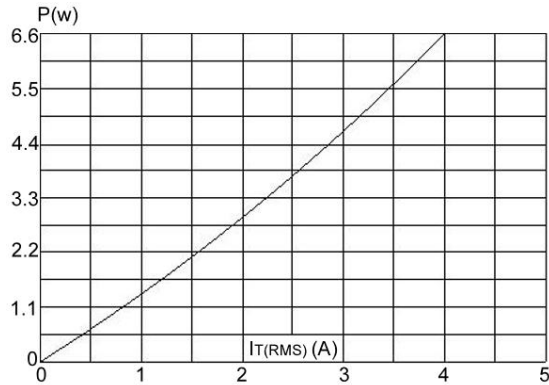


FIG.2: on-state current versus case temperature

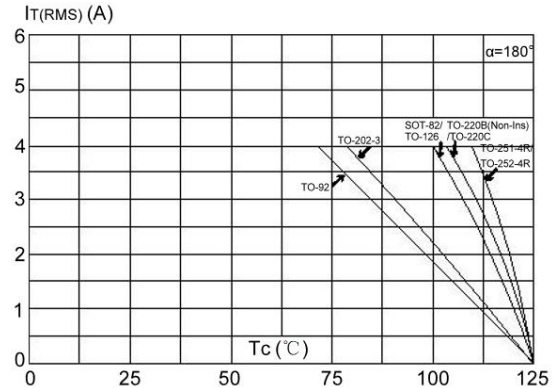


FIG.3: Surge peak on-state current versus number of cycles

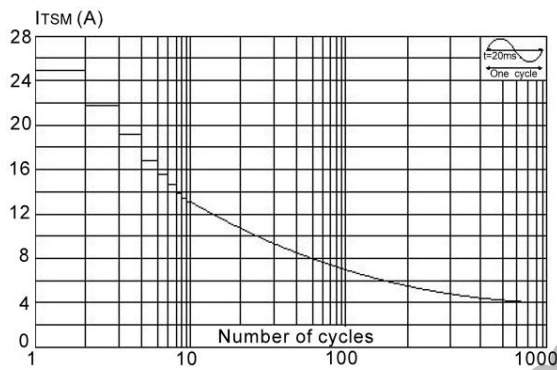


FIG.4: On-state characteristics (maximum values)

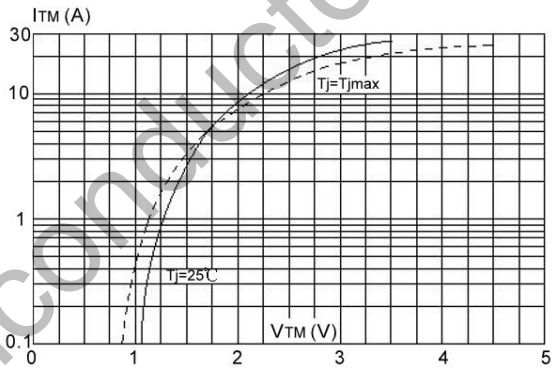


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I_2 t$ ($di/dt < 50\text{A}/\mu\text{s}$)

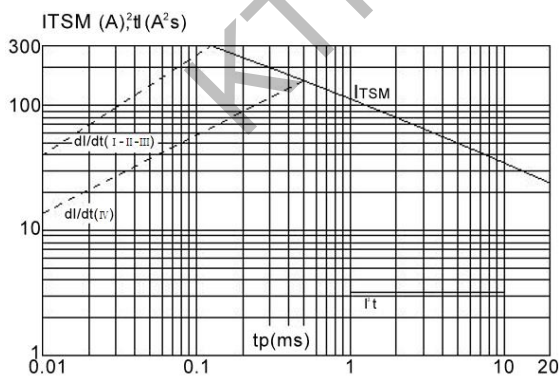


FIG.6: Relative variations of gate trigger current holding current and latching current versus junction temperature

