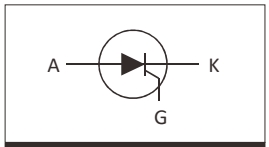
DESCRIPTION

The BT151-650R of silicon controlled rectifier , with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interference.It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.

TO-220 PACKAGE



SCHEMATIC SYMBOL

MAIN FEATURES

Symbol	Value	Unit
V_{DRM}/ V_{RRM}	≥650	V
$I_{T(RMS)}$	≥12	A
I_{GT}	≤15	mA

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{DRM}	Repetitive peak off-state voltage	T_j=25°C	650	V
V_{RRM}	Repetitive peak reverse voltage	T_j=25°C	650	V
$I_{T(RMS)}$	RMS on-state current(360°conduction angle)	T_C=100°C	12	A
I_{TSM}	Non repetitive surge peak on-state current	T_p=10ms	120	A
I^2t	I^2t value for fusing	T_P=10ms	72	A^2s
dI_T/dt	Repetitive rate of rise of on-state current	I_G=2I_{GT}	50	A/us
I_{GM}	Peak gate current	T_j=25°C	2	A
P_{GM}	Peak gate power	T_j=25°C	5	W
$P_{G(AV)}$	Average gate power dissipation	T_j=25°C	0.5	W
Tstg	Storage temperature range		−40~+150	°C
Tj	Operatingjunction temperaturerange		−40~+125	°C

ELECTRICAL CHARACTERISTICS(Tj=25°C unless otherwise specified)

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
I_{GT}	V_D=12V R_L=33Ω	-	4	15	V
V_{GT}	V_D=12V R_L=33Ω	-	0.75	1.5	V
V_{GD}	V_D=V_{DRM} R_L=33KΩ T_j=125°C	0.2	-	-	V
I_H	I_T=500mA	-	12	30	mA
I_L	I_G=1.2I_{GT}	-	12	40	mA
	V_D=2/3V_{DRM} Gate Open T_j=125℃	200	400	-	V/us

STATIC CHARACTERISTICS

Symbol	Parameter		Value	Unit
V_{TM}	I_{TM}=23A t_p=380μs	T_j=25°C	≤1.7	V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25°C	≤10	uA
I_{RRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=125°C	≤1.0	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-mb)}$	Junction to mounting base	1.7	°C/W

RATINGS AND CHARACTERISTIC CURVES (T_A=25°C unless otherwise noted)

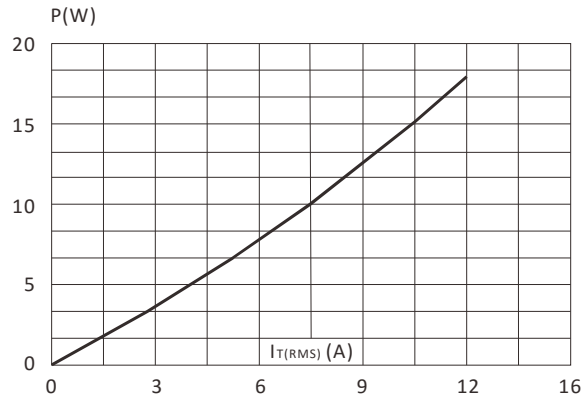


FIG.1: Maximum power dissipation versus RMS on-state current

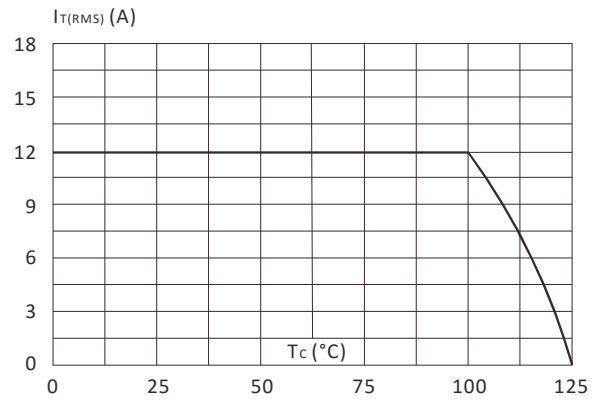


FIG.2: RMS on-state current versus case temperature

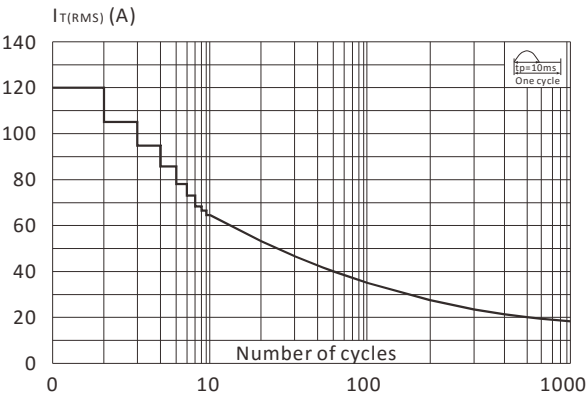


FIG.3: Surge peak on-state current versus number of cycles

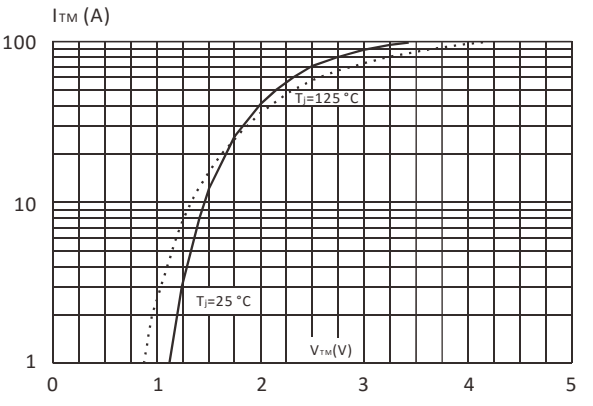


FIG.4: On-state characteristics (maximum values)

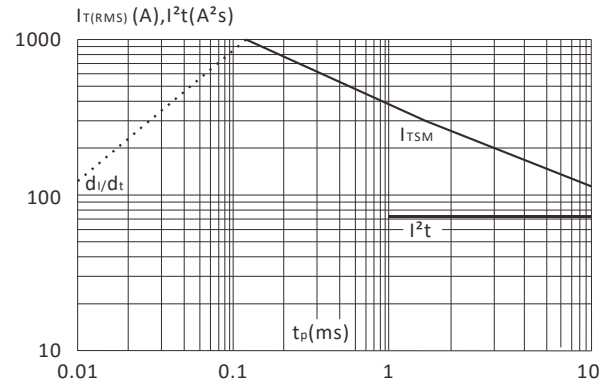


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width t_p<10ms,and corresponging value of I_t(dI/dt<50A/μs)

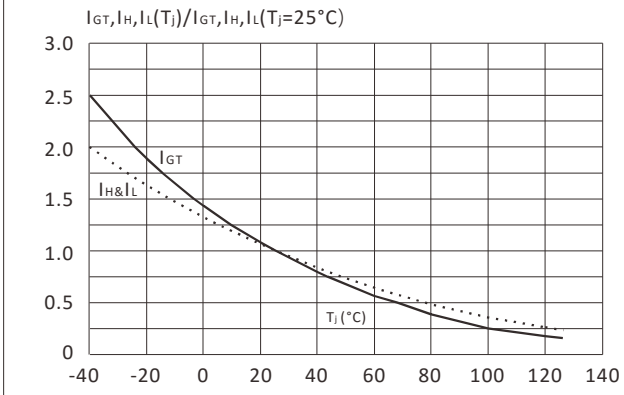
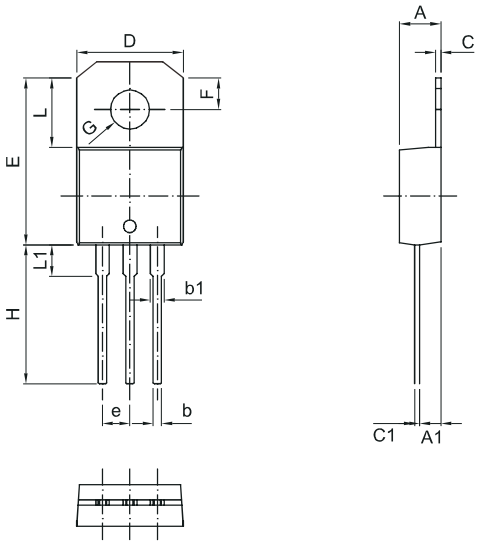


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

TO-220 PACKAGE INFORMATION



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.56	4.83	0.140	0.190
A1	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b1	1.14	1.78	0.045	0.070
C	0.51	1.40	0.020	0.055
C1	0.36	0.61	0.014	0.024
D	9.65	10.67	0.380	0.420
E	14.22	16.51	0.560	0.650
e	2.54BSC		0.10BSC	
F	2.54	3.05	0.100	0.120
G	3.53	3.90	0.139	0.154
H	12.70	14.73	0.500	0.580
L	5.84	6.86	0.230	0.270
L1	-	6.35	-	0.250

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