

BT152 Series

Description:

High current density due to singel mesa technology.

BT152 series of silicon controlled rectifiers are specifically designed for medium power switching and phase control applications.

BT152 series are suitable for general purpose applications, a high gate sensitivity is required.

BT152F are full pack plastic package, they provides a 2000V RMS isolation voltage from all three terminals to external heatsink.

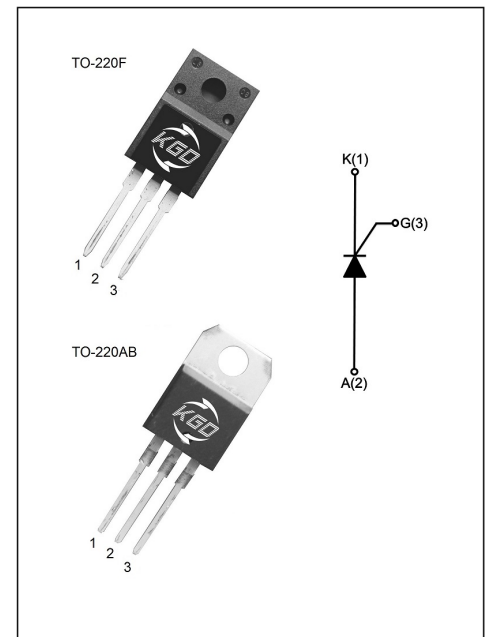
Features:

Blocking voltage to 650/800V

On-state RMS current to 20A

Non-repetitive peak on-state current to 120A

Absolute Maximum Ratings



Symbol	Parameter	Conditions	Value	Unit
V_{DRM}	Repetitive peak off-state voltage	BT152-650R $T_J=25^\circ\text{C}$	650	V
V_{RRM}	Repetitive peak Reverse voltage	BT152-800R	800	
$I_{T(RMS)}$	RMS on-state current (all conduction angels)	TO-220AB $T_c=109^\circ\text{C}$	20	A
		TO-220F $T_c=69^\circ\text{C}$		
$I_{T(av)}$	Average on-state current (half sine wave)	TO-220AB $T_c=109^\circ\text{C}$	13	A
		TO-220F $T_c=69^\circ\text{C}$		
I_{TSM}	Non-repetitive surge peak On-state current (half sine cycle $T_J=25^\circ\text{C}$)	f= 50Hz tp=10ms	200	A
		f= 60Hz tp=8.3ms	220	
I^2t	I^2t Value for fusing	tp=10ms	200	A^2S
di_T/dt	Repetitive rate of rise of on-state current after triggering $I_{TM}=20\text{A}$ $I_G=50\text{mA}$ dI_G/dt 50Ma/ms		100	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	tp=20 μs , $T_J=125^\circ\text{C}$	5	A
P_{GM}	Peak gate power		20	W
$P_{G(AV)}$	Average gate power dissipation		0.5	W

BT152 Series

T_{STG}	Storage temperature	-40	150	°C
T_J	Junction temperature	-40	120	°C

● Electrical Characteristics

Symbol	Conditions	Value			Unit
		MIN	TYP	MAX	
I_{GT}	$V_D=12V, R_L=33\Omega$	/	6	25	mA
V_{GT}		/	0.7	1.5	V
V_{GD}	$V_D=V_{DRM}, R_L=3.3K\Omega, T_J=110^\circ C$	/	/	0.2	V
I_L	$I_G=1.2I_{GT}$	/	25	50	mA
I_H	$I_T=500mA$	/	20	40	mA
dv/dt	$V_{DM}=67\%V_{DRM}, \text{gate open}, T_J=125^\circ C$	200	300	/	V/ μs

● Electrical Characteristics

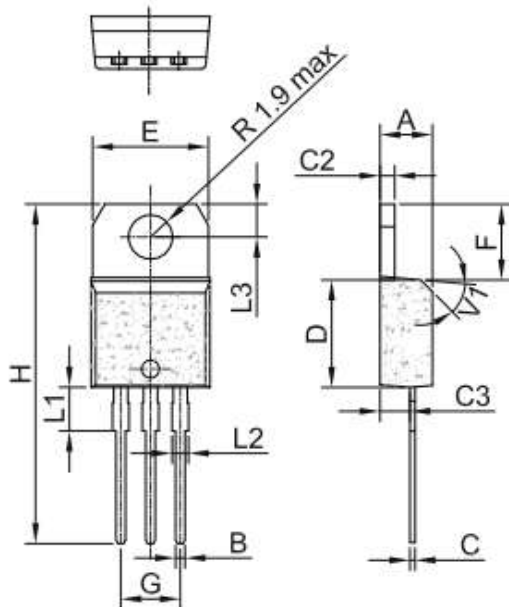
Symbol	Parameter	Numerical	Unit	
V_{TM}	$I_T=23A, t_p=380\mu s$ $T_J=25^\circ C$	1.7	V	
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_J=25^\circ C$	10	μA
I_{RRM}		$T_J=125^\circ C$	1	mA

● Thermal Characteristics

Symbol	Parameter	Numerical(MAX)	Unit	
$R_{th(j-mb)}$	Thermal resistance from junction to mounting base	TO-220C	1.1	°C/W
$R_{th(j-hs)}$	Thermal resistance from junction to heatsink compound	TO-220F	4.5	

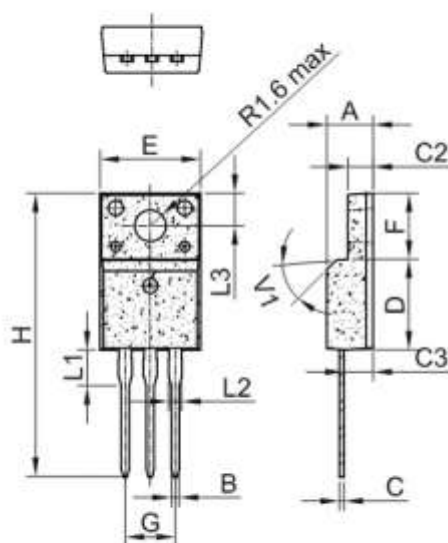
● Package Outline Dimensions

TO-220AB

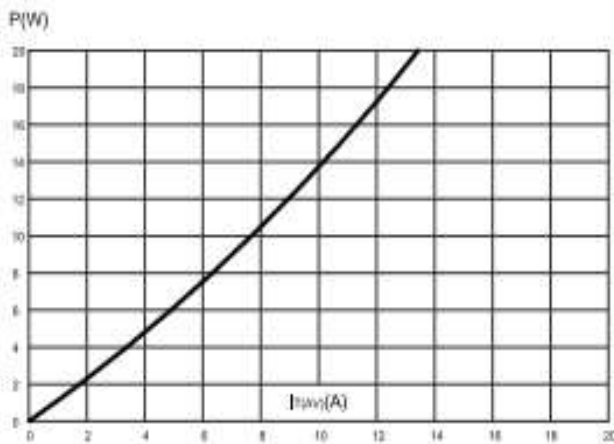
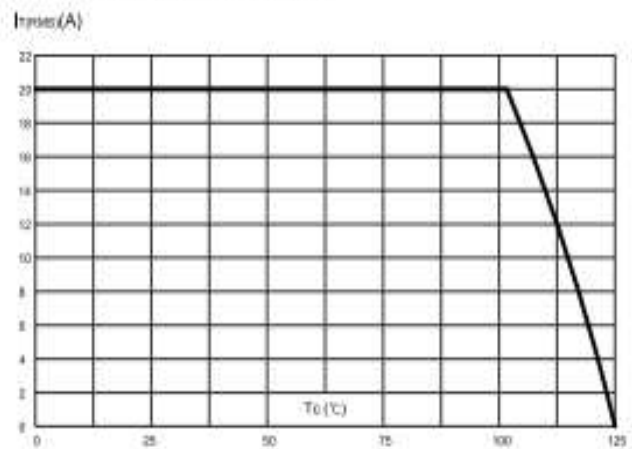
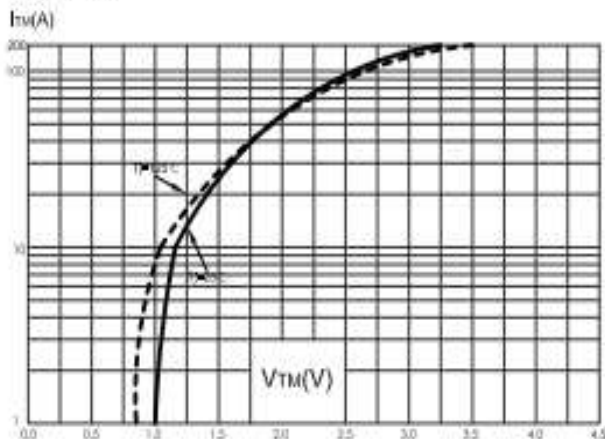
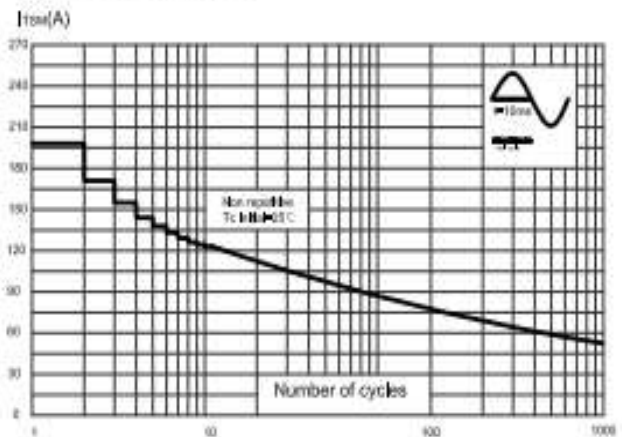
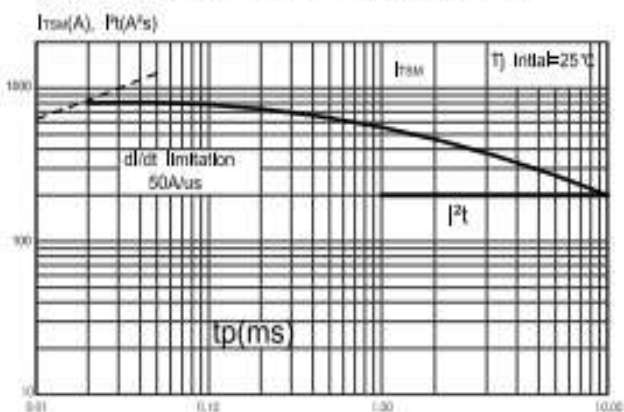


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.61		0.88	0.024		0.034
C	0.46		0.70	0.018		0.027
C2	1.23		1.32	0.048		0.051
C3	2.4		2.72	0.094		0.107
D	8.6		9.7	0.338		0.382
E	9.8		10.4	0.386		0.409
F	6.2		6.6	0.244		0.259
G	4.8		5.4	0.189		0.213
H	28.0		29.8	11.0		11.7
L1		3.75			0.147	
L2	1.14		1.7	0.044		0.066
L3	2.65		2.95	0.104		0.116
V1		40°			40°	

TO-220F



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.8	0.173		0.189
B	0.74	0.8	0.83	0.029	0.031	0.033
C	0.5		0.75	0.020		0.030
C2	2.4		2.7	0.094		0.106
C3	2.6		3.0	0.102		0.118
D	8.8		9.3	0.346		0.367
E	9.7		10.3	0.382		0.406
F	6.4		6.8	0.252		0.268
G	5.0		5.2	0.197		0.205
H	28.0		29.8	11.0		11.7
L1		3.63			0.143	
L2	1.14		1.7	0.044		0.067
L3		3.3			0.130	
V1		40°			40°	

FIG.1: Maximum power dissipation versus average on-state current(half cycle)

FIG.2: RMS on-state current versus case temperature(full cycle)

FIG.3: On-state characteristics (maximum values)

FIG.4: Surge peak on-state current versus number of cycles.

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^2t .

FIG.6: Relative variation of gate trigger current, holding current and latching current versus junction temperature(typical values).
