

Product Manual

EKWIN ELECTRONICS CO.,LTD

EK BT150

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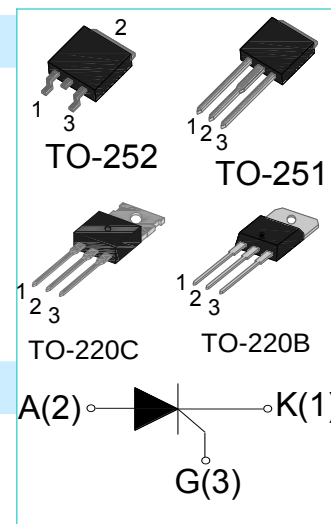
BT150 Serial

Main Features:

IT(RMS)	VDRM/VRRM	VTM
4A	600V and 800 V	≤1.7 V

Description:

High current density due to singel mesa technology.BT150 series of silicon controlled rectifiers are specifically designed for medium power switching and phase control applications. BT150 series are suitable for general purpose applications.a high gate sensitivity is required .



Absolute Ratings(limiting values) :

Symbol	Parameter		value	Unit
$I_{T(RMS)}$	on-state RMS current(180°C conduction angle)	TO-251/ TO-252 (TC=90 °C)	4	A
		TO-220B/C (TC=97 °C)		
I_{TSM}	Non repetitive surge peak on-state current (Tj= 25 °C)	tp= 8.3 ms	35	A
		tp = 10 ms	30	
V_{DRM}	Repetitive peak off-state voltage(Tj =25°C)		600 and 800	V
V_{RRM}	Repetitive peak reverse voltage(Tj =25°C)		600 and 800	V
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
I^2t	I^2t value for fusing $T_j = 125^\circ\text{C}$	tp = 10 ms	4.5	A ² s
di/dt	Critical rate of rise of on-state current $I_G=2xI_{GT}$, $tr \leq 100\text{ns}$		50	A/μs
I_{GM}	Peak gate current tp=20us Tj=125°C		1.2	A
P_{GM}	Peak gate power tp=20us Tj=125°C		2	W
$P_{G(av)}$	Average gate power dissipation Tj=125°C		0.2	W

Electrical Characteristics :

Symbol	Test Condition		range	Value	Unit
I_{GT}	V _D =12V R _L =33Ω	T _j =25°C	MAX	200	uA
V_{GT}		T _j =25°C	MAX	0.8	V
V_{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j =110°C	MIN	0.2	V
t_{gt}	V _D =V _{DRM} I _G = 500mA dI _G /dt = 0.2A/μs	T _j =25°C	TYP	2	μs
I_L	V _D =12V I _{GT} = 0.1 A	T _j =25°C	MAX	6	mA
I_H	I _T = 500mA gate open	T _j =25°C	MAX	5	mA
V_{TM}	I _{TM} = 2*I _{T (RMS)} tp=380μs	T _j =25°C	TYP	1.5	V
I_{DRM} I_{RRM}	V _D =V _{DRM} , V _R =V _{RRM}	T _j =25°C	TYP	5	μA
		T _j =110°C	MAX	100	uA
dV_D/dt	V _D =67%V _{DR} exponential waveform; R _{GK} = 100 Ω	T _j =125°C	MAX	10	V/μs

Thermal Resistances :

Symbol	Parameter		Value	Unit
R_{th (j-c)}	junction to case	TO-252/251	6.5	°C/W
		TO-220B/C	3.0	

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

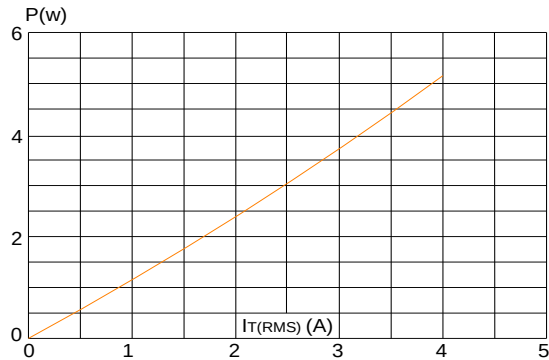


FIG.2: RMS on-state current versus case temperature

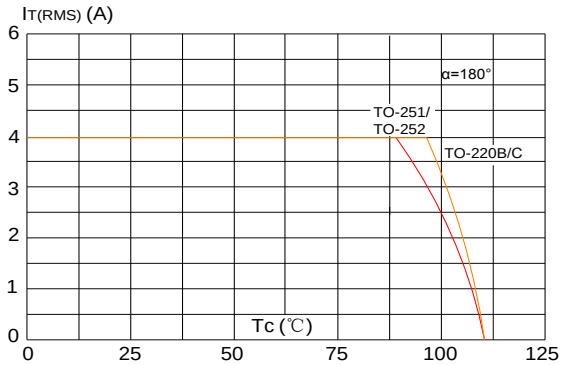


FIG.3: Surge peak on-state current versus number of cycles

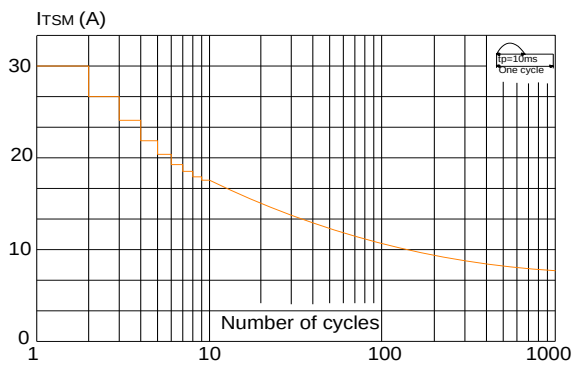


FIG.4: On-state characteristics (maximum values)

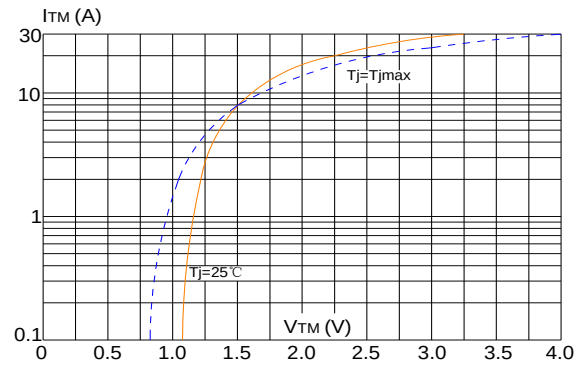


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

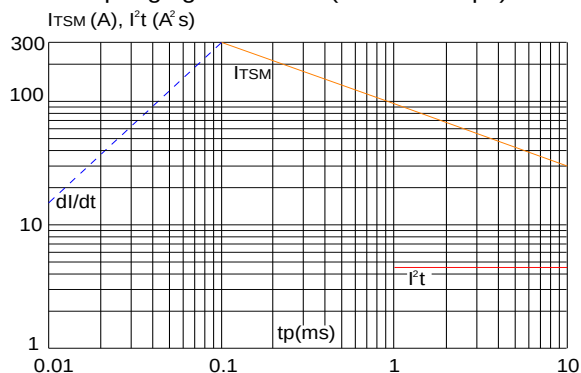
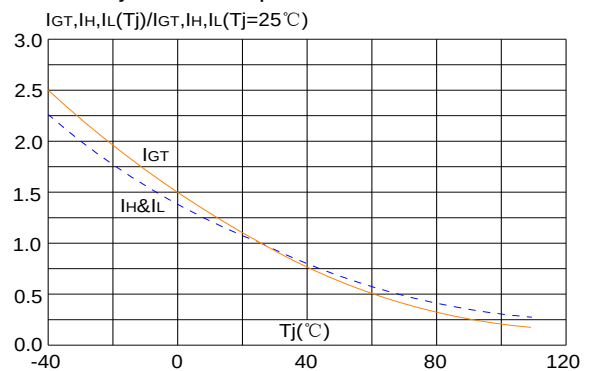
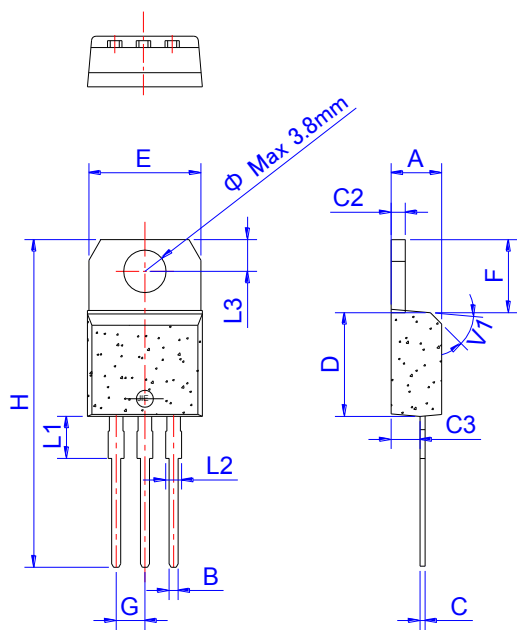


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

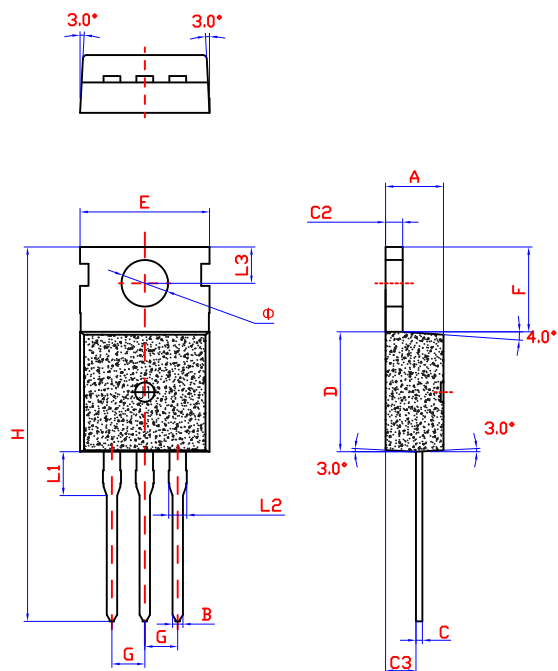


Package Mechanical Data :



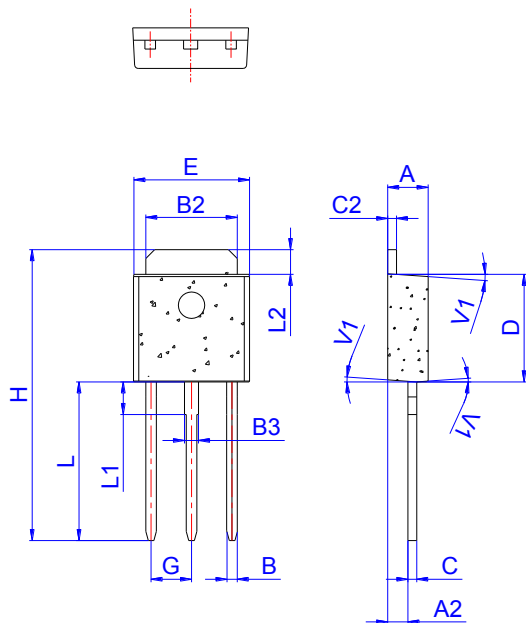
TO-220B

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	



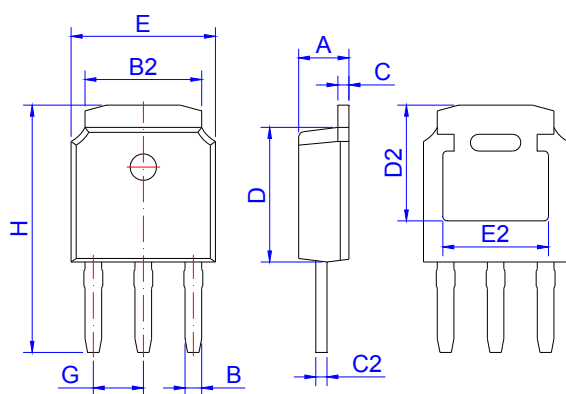
TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.7		0.9	0.027		0.035
C	0.45		0.6	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.2		2.6	0.086		0.102
D	8.9		9.9	0.350		0.390
E	9.9		10.3	0.390		0.406
F	6.3		6.9	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	11.0		11.7
L1		3.2			0.126	
L2	1.14		1.7	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	



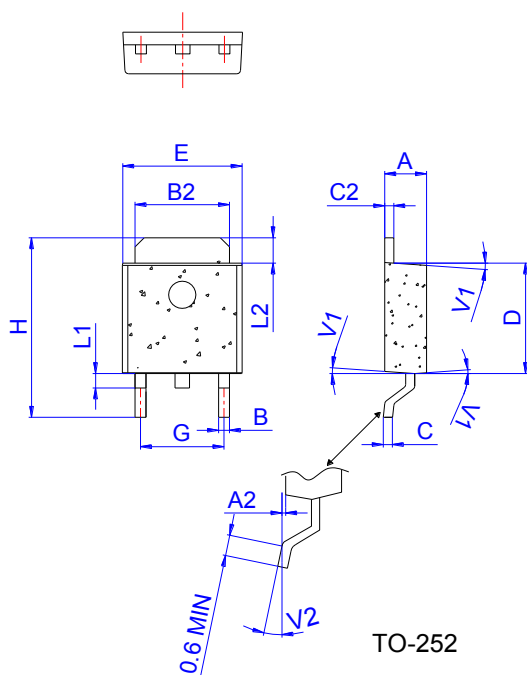
TO-251

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	

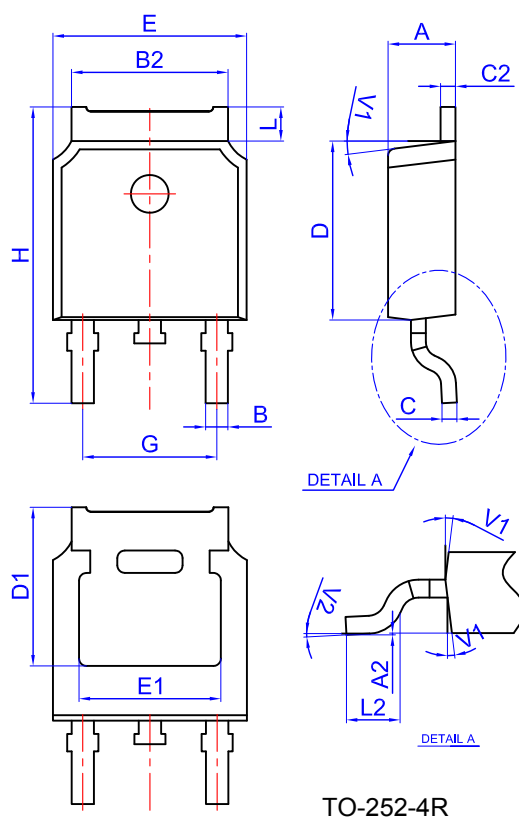


TO-251-4R

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10	2.30	2.50	0.083	0.091	0.098
B	0.66	0.76	0.86	0.026	0.030	0.034
B2	5.15	5.33	5.48	0.203	0.210	0.216
C	0.44	0.51	0.58	0.017	0.020	0.023
C2	0.44	0.51	0.58	0.017	0.020	0.023
D	5.90	6.10	6.30	0.232	0.240	0.248
D2	5.30 REF			0.209 REF		
E	6.40	6.60	6.80	0.252	0.260	0.268
E2	4.83 REF			0.190 REF		
G	2.19	2.29	2.39	0.086	0.090	0.094
H	10.60	11.20	11.80	0.417	0.441	0.465



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°