

Product Manual

EKWIN ELECTRONICS CO.,LTD

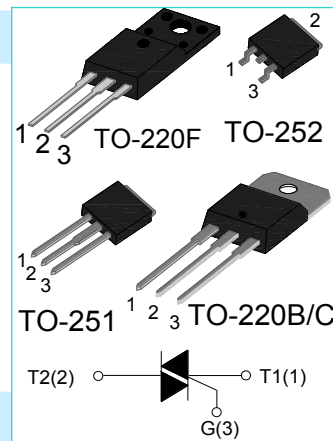
EK BT136

www.ekwin.net

 Standard TRIACS
BT136 Serial

Main Features:

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	V_{TM}
4 A	600V and 800 V	$\leq 1.7V$



Description:

High current density due to mesa technology;Glass passivation. BT136 series TRIACS is suitable for general purpose AC switching.they can be used as an ON/OFF Function in applications such as static relays,heating regulation,induction motor starting circuits..or for phase control operation light dimmers,motor speed controllers.

Absolute Ratings(limiting values) :

Symbol	Parameter		Value	Unit
T_{stg}	Storage junction temperature range		- 40 to + 150	°C
T_j	Operating junction temperature range		- 40 to + 125	°C
$I_{T(RMS)}$	RMS on-state current	TO-251/TO-252 (TC=110°C)	4	A
		TO-220B/C (TC=107°C)		
		TO-220F (TC=90°C)		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, F=50Hz)		25	A
V_{DRM}	Repetitive peak off-state voltage($T_j = 25^\circ C$)		600 and 800	V
V_{RRM}	Repetitive peak reverse voltage($T_j = 25^\circ C$)		600 and 800	V
V_{DSM}	Non repetitive surge peak Off-state voltage		$V_{DRM} + 100$	V
V_{RSM}	Non repetitive peak reverse voltage		$V_{RRM} + 100$	V
I^2t	I^2t value for fusing $t_p = 10$ ms		3.1	A ² s

d_i/d_t	Critical rate of rise of on-state current ($I_G = 2 \times I_{GT}$)	50	A/ μ s
I_{GM}	Peak gate current	2	A
P_{G(AV)}	Average gate power dissipation	0.5	W
P_{GM}	Peak gate power	5	W

● SNUBBERLESS(3 Quadrants)

Symbol	Test Condition	Quadrant	Range	Value	Unit
				EW	
I_{GT}	V _D =12V R _L =33 Ω	I-II-III	MAX	10	mA
V_{GT}		I-II-III	MAX	1.5	V
V_{GD}	V _D =V _{DRM} T _j =125 $^{\circ}$ C R _L =3.3k Ω	I-II-III	MIN	0.2	V
I_L	I _G =1.2 I _{GT}	I-III	TYP	30	mA
		II		45	
I_H	IT= 100mA		MAX	25	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125 $^{\circ}$ C		MIN	50	V/ μ s
(dV/dt)_c	(dI/dt) _c =1.7A/ms T _j =125 $^{\circ}$ C		MIN	0.5	V/ μ s

● STANDARD(4 Quadrants)

Symbol	Test Condition	Quadrant	Range	Value	Unit
				E	
I_{GT}	V _D =12V R _L =33 Ω	I-II-III	MAX	10	mA
		IV	MAX	25	
V_{GT}		I-II-III-IV	MAX	1.5	V
V_{GD}	V _D =V _{DRM} T _j =125 $^{\circ}$ C R _L =3.3k Ω	I-II-III-IV	MIN	0.2	V

I_L	I _G =1.2 I _{GT}	I-III-IV	TYP	30	mA
		II		45	
I_H	I _T = 100mA		MAX	25	mA
dV/dt	V _D =2/3V _{DRM} Gate Open T _j =125°C		MIN	50	V/μs
(dV/dt)_c	(dI/dt) _c =1.7A/ms T _j =125°C		MIN	0.5	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter			Value(MAX)	Unit
V_{TM}	I _{TM} = 5.5A tp= 380μs	T _j =25°C	MAX	1.7	V
I_{DRM} I_{RRM}	V _D =V _{DRM} , V _R =V _{RRM}	T _j =25°C	MAX	10	μ A
		T _j =125°C		1	mA

Thermal Resistances :

Symbol	Parameter		Value	Unit
R_{th(j-c)}	junction to case(AC)	TO-251/TO-252 (TC=110°C)	3.0	°C/W
		TO-220B/C (TC=107°C)		
		TO-220F (TC=90°C)		

Ordering Information:

BT 136 - 600 E	
SRCs SERIES	E: IGT ₁₋₃ ≤10mA STANDARD EW:IGT ₁₋₃ ≤10mA SNUBBERLESS
I _{T(RMS)} :4A	600:V _{DRM} /V _{RRM} ≥600 800:V _{DRM} /V _{RRM} ≥800

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

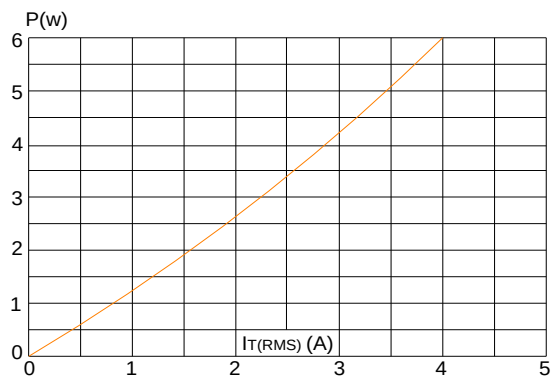


FIG.2: RMS on-state current versus case temperature

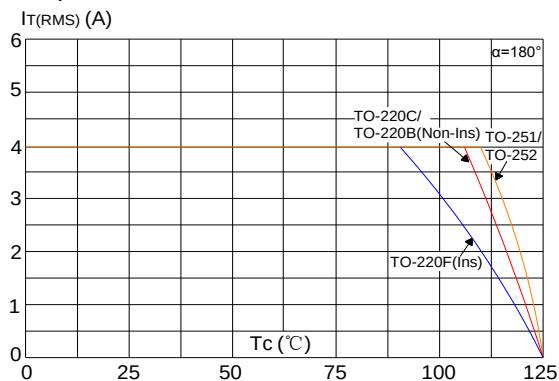


FIG.3: Surge peak on-state current versus number of cycles

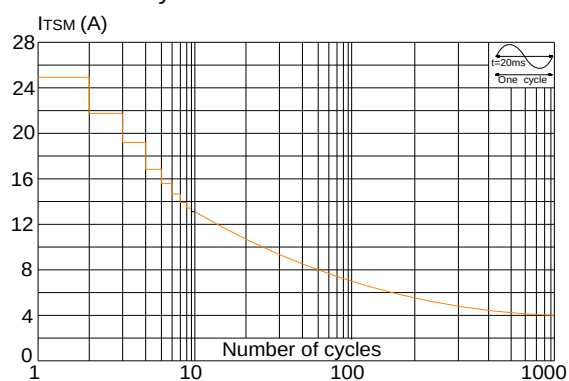


FIG.4: On-state characteristics (maximum values)

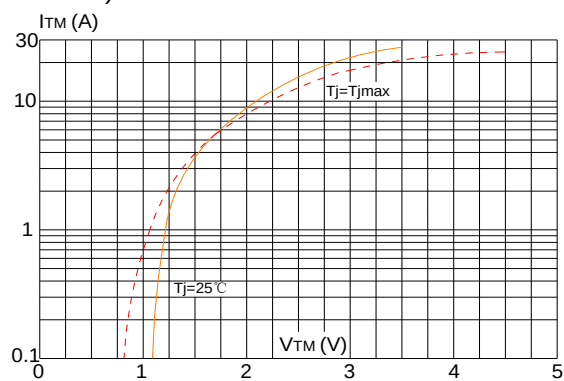


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II -III: $dI/dt < 50\text{A}/\mu\text{s}$; IV: $dI/dt < 10\text{A}/\mu\text{s}$)

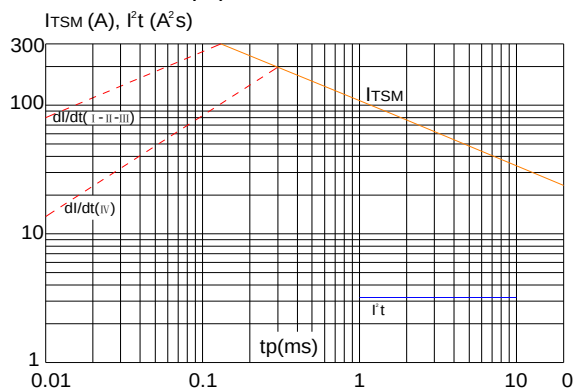


FIG.6: Relative variations of gate trigger current versus junction temperature

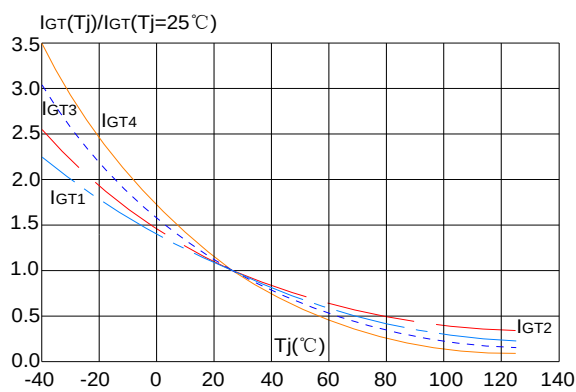


FIG.7: Relative variations of holding current versus junction temperature

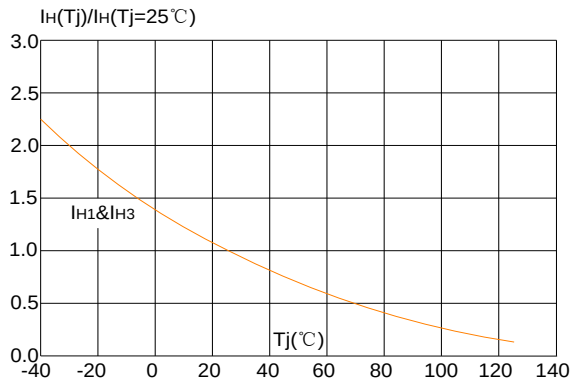
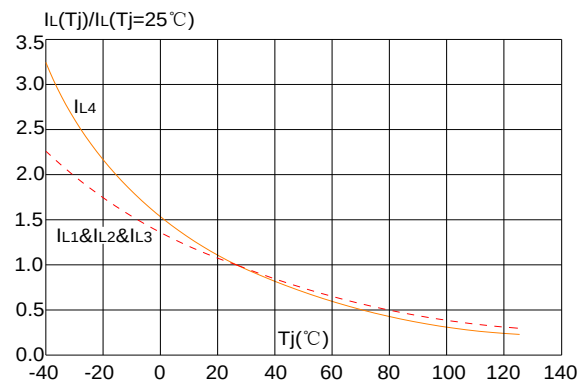
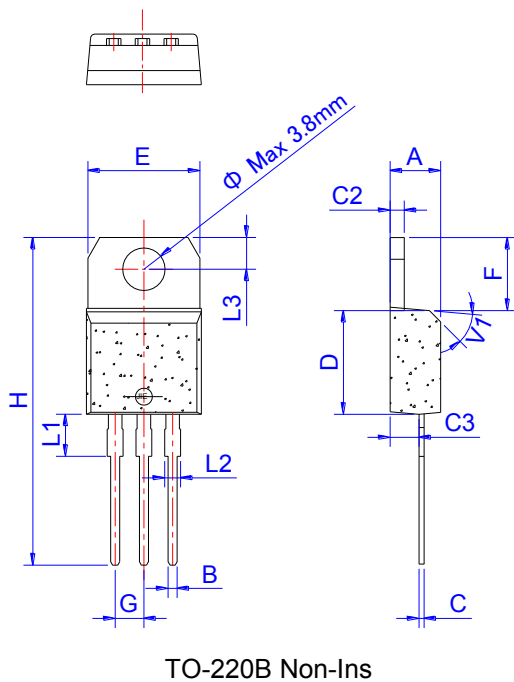


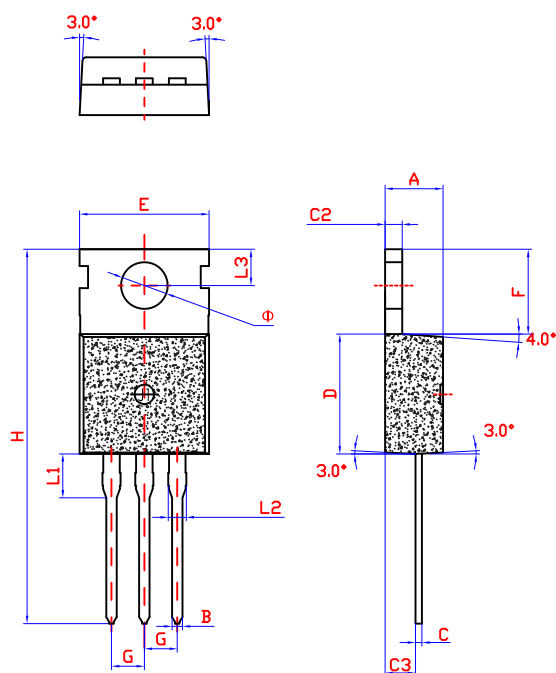
FIG.8: Relative variations of latching current versus junction temperature



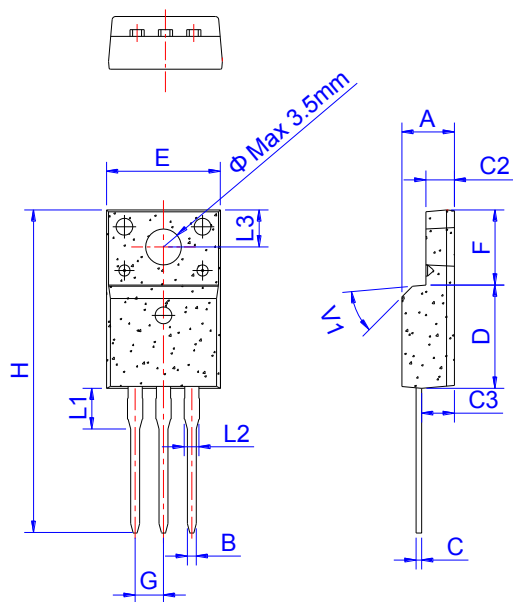
Package Mechanical Data :



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°	

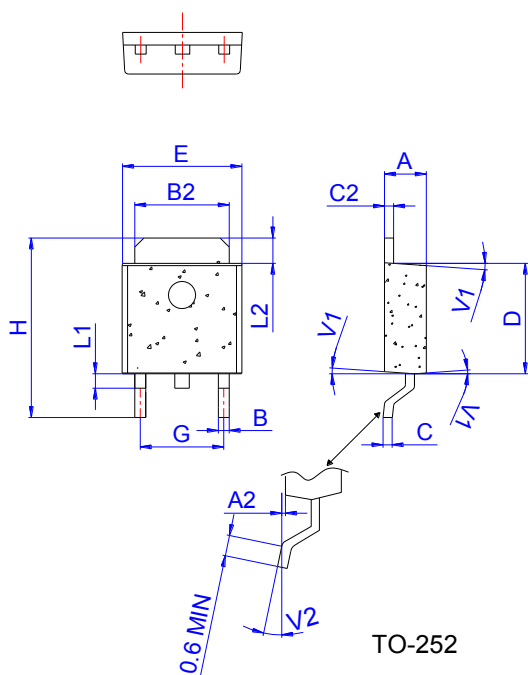


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.7		0.9	0.027		0.035
C	0.45		0.6	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.2		2.6	0.086		0.102
D	8.9		9.9	0.350		0.390
E	9.9		10.3	0.390		0.406
F	6.3		6.9	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	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	

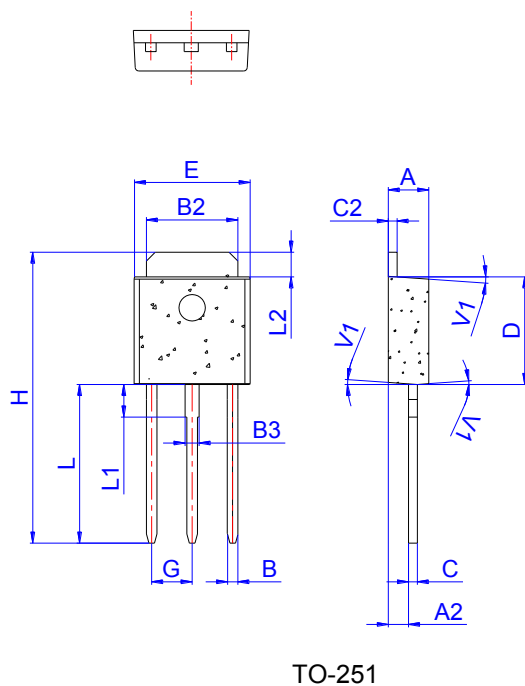


TO-220F Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.80	0.173		0.189
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.48		0.75	0.019		0.030
C2	2.40		2.70	0.094		0.106
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.70		10.3	0.382		0.406
F	6.40		7.00	0.252		0.276
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	



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	2.20		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°	