

4A TRIACs

Features

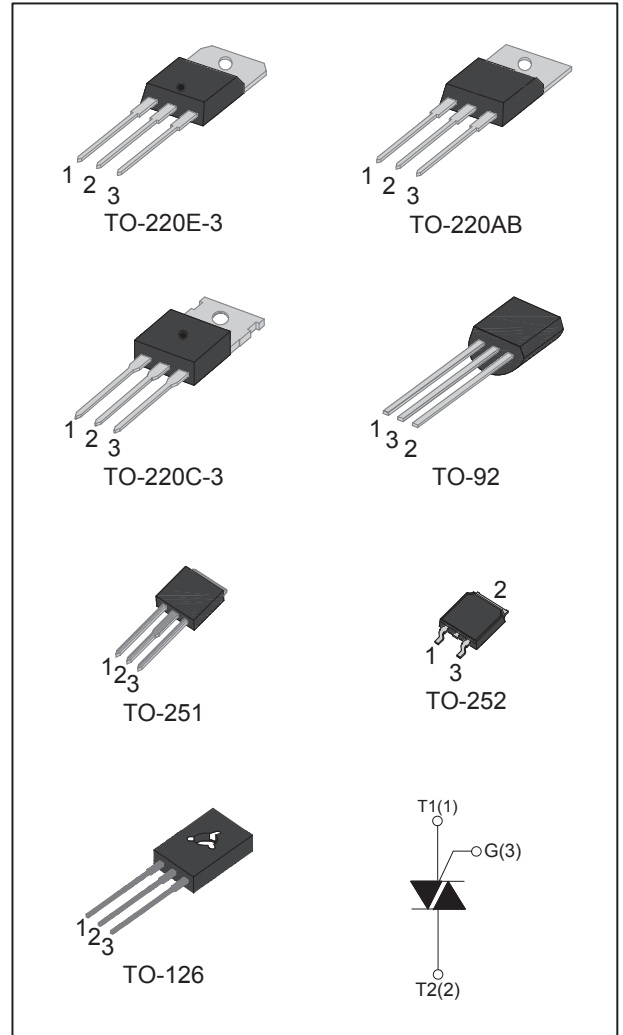
- Glass passivated chip junction
- High voltage and surge capability
- Low thermal resistance and durability
- Triggering in four quadrants
- Pb-free
- RoHS compliant
- SMD device halogen free

Applications

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

Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
V_{DRM} / V_{RRM}	600 / 800	V



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{STG}	-40 to 150	°C
Operating junction temperature range	T_J	-40 to 125	°C
Repetitive peak off-state voltage ($T_J = 25^\circ\text{C}$)	V_{DRM}	600 / 800	V
Repetitive peak reverse voltage ($T_J = 25^\circ\text{C}$)	V_{RRM}	600 / 800	V
RMS on-state current	TO-220E-3 ($T_C=103^\circ\text{C}$)	4	A
	TO-220AB ($T_C=103^\circ\text{C}$)		
	TO-220C-3 ($T_C=103^\circ\text{C}$)		
	TO-92 ($T_C=70^\circ\text{C}$)		
	TO-251 ($T_C=110^\circ\text{C}$)		
	TO-252 ($T_C=110^\circ\text{C}$)		
	TO-126 ($T_C=100^\circ\text{C}$)		

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Non repetitive surge peak on-state current (180° conduction angle, F = 50Hz, t _p = 20ms, full cycle)	I _{TSM}	30	A
I ² t value for fusing (t _p = 10ms)	I ² t	4.5	A ² s
Critical rate of rise of on-state current (I _G = 2×I _{GT} , t _r ≤ 100ns)	di/dt	50 (I - II - III) 10 (IV)	A/μs
Peak gate current	I _{GM}	2	A
Average gate power dissipation	P _{G(AV)}	0.5	W

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Standard (4 Quadrants)

Symbol	Test Condition	Quadrant		Value			Unit
I _{GT}	V _D = 12V, R _L = 100Ω	I - II - III	MAX	3	5	10	mA
		IV		5	10	25	
V _{GT}	V _D = 12V, R _L = 100Ω	ALL	MAX	1.3			V
V _{GD}	V _D = V _{DRM} , T _J = 125°C	ALL	MIN	0.2			V
I _L	I _G = 1.2×I _{GT}	I - III - IV	MAX	8	10	20	mA
		II		12	15	35	
I _H	V _{AK} = 12V, I _{GK} = 100mA		MAX	5	10	20	mA
dV/dt	V _D = 67% V _{DRM} , Gate open, T _J = 125°C		MIN	20	50	100	V/μs

Static Characteristics

Symbol	Test Condition			Value	Unit
V _{TM}	I _{TM} = 5.5A, t _p = 380μs	T _J = 25°C	MAX	1.65	V
I _{DRM} I _{RRM}	V _D = V _{DRM} , V _R = V _{R_{RM}}	T _J = 25°C	MAX	5	μA
		T _J = 125°C		1	mA

Thermal Resistances

Symbol	Parameter		Value	Unit
R _{θJC}	Junction to case(AC)	TO-220E-3	3.1	°C/W
		TO-220AB	3.1	
		TO-220C-3	3.1	
		TO-92	15	
		TO-251	3.7	
		TO-252	3.7	
		TO-126	4.1	

Ordering Information

Ordering Type	Marking	Package	Quantity	Delivery Mode
BT04xx-yyE	BT04xx-yyE	TO-220E-3	50	Tube
BT04xx-yyT	BT04xx-yyT	TO-220AB	50	Tube
BT04xx-yyC	BT04xx-yyC	TO-220C-3	50	Tube
BT04xx-yyA	BT04xx-yyA	TO-92	1,000	Bag
BT04xx-yyH	BT04xx-yyH	TO-251	80	Tube
BT04xx-yyDP	BT04xx-yyDP	TO-252	3,000	13" diameter reel
BT04xx-600D	B04xx-6	TO-126	50	Tube
BT04xx-800D	B04xx-8	TO-126	50	Tube

Note : xx = sensitivity, yy = voltage

Ordering Information Scheme

BT 04 05 - 600 E

Triac series

BT = 4 Quadrants

$I_{T(RMS)}$

04 = 4A

I_{GT} Sensitivity

05 = 3/3/3/5mA

10 = 5/5/5/10mA

25 = 10/10/10/25mA

V_{DRM} / V_{RRM}

600 = 600V

800 = 800V

Package type

E = TO-220E-3

T = TO-220AB

C = TO-220C-3

A = TO-92

H = TO-251

DP = TO-252

D = TO-126

Ratings and Characteristics Curves

Fig.1 - RMS on-state current versus case temperature

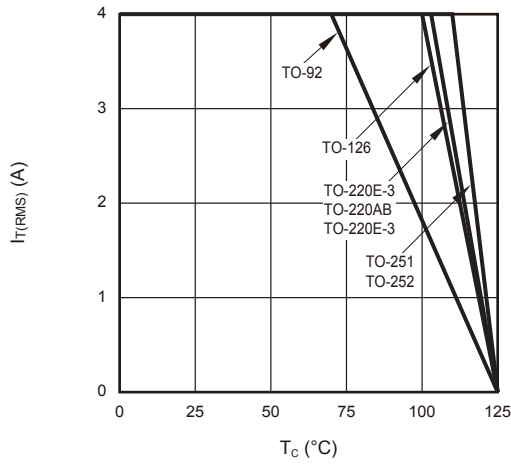


Fig.2 - Surge peak on-state current versus number of cycles

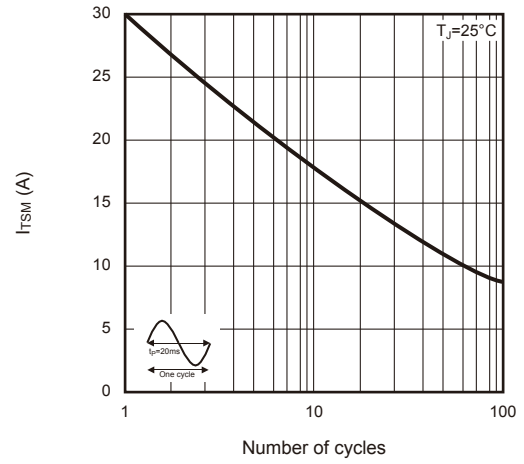


Fig.3 - On-state characteristics (maximum values)

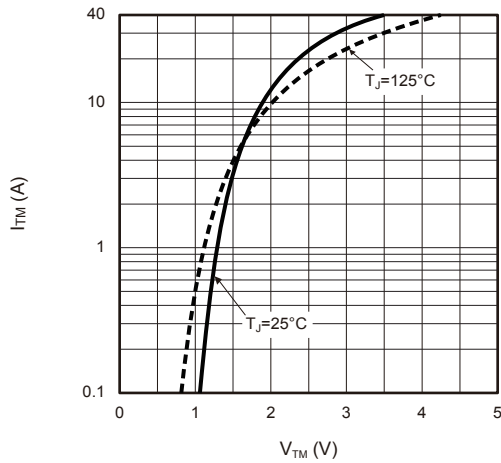


Fig.4 - Maximum power dissipation versus RMS on-state current

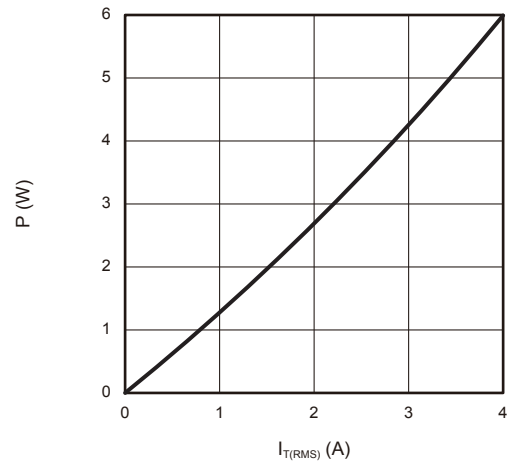
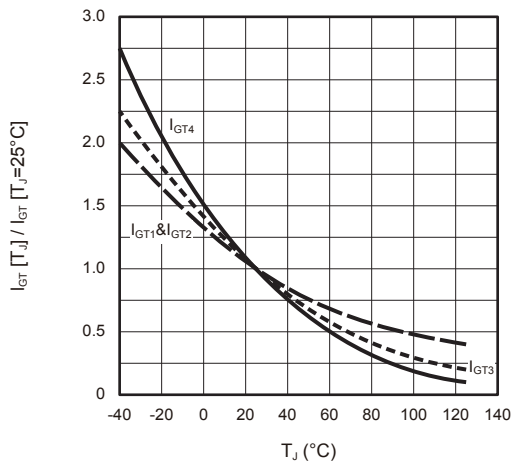
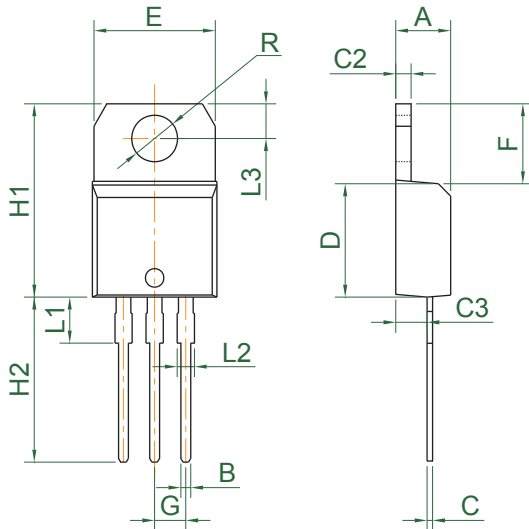


Fig.5 - Relative variations of gate trigger current versus junction temperature



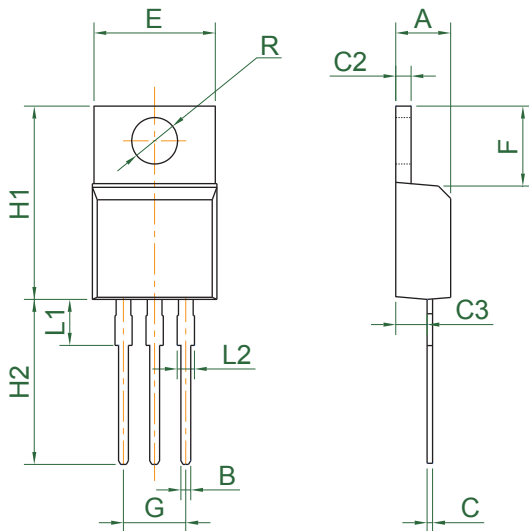
Package Outline Dimensions

TO-220E-3



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.38	-	4.61	.172	-	.182
B	0.6	-	0.92	.024	-	.036
C	0.35	-	0.7	.014	-	.028
C2	1.15	-	1.36	.045	-	.054
C3	2.35	-	2.75	.092	-	.108
D	8.6	-	9.7	.339	-	.382
E	9.8	-	10.4	.386	-	.409
F	5.85	-	6.95	.230	-	.274
G	2.4	-	2.7	.094	-	.106
H1	14.8	-	16.1	.583	-	.634
H2	13.0	-	14.0	.512	-	.551
L1	2.8	-	4.2	.110	-	.165
L2	1.14	-	1.7	.045	-	.067
L3	2.65	-	3.1	.104	-	.122
R	3.7	-	3.95	.146	-	.156

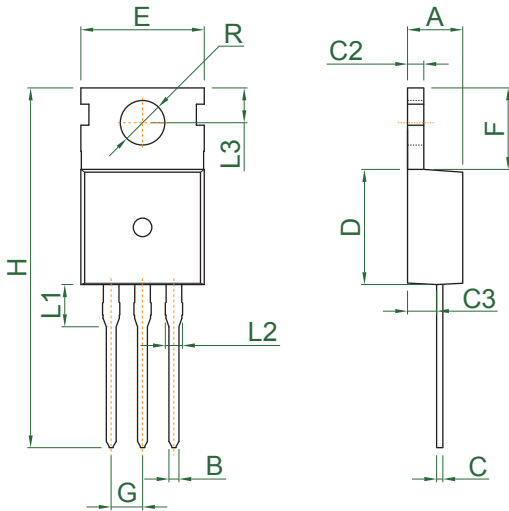
TO-220AB



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.07	-	4.85	.160	-	.191
B	0.6	-	1.0	.024	-	.039
C	0.28	-	0.7	.011	-	.028
C2	1.1	-	1.5	.043	-	.059
C3	2.04	-	2.92	.080	-	.115
E	-	-	10.5	-	-	.413
F	5.8	-	6.93	.228	-	.273
G	4.84	-	5.32	.190	-	.209
H1	13.0	-	16.6	.512	-	.654
H2	12.7	-	14.2	.500	-	.559
L1	2.7	-	4.5	.106	-	.177
L2	1.1	-	1.7	.043	-	.067
R	3.4	-	3.95	.134	-	.156

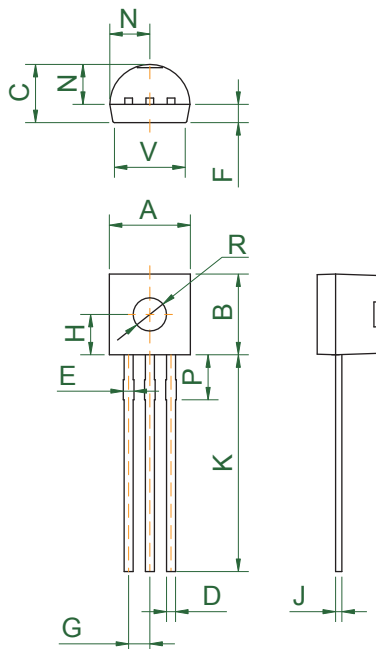
Package Outline Dimensions

TO-220C-3



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4	-	4.6	.173	-	.181
B	0.7	-	0.9	.028	-	.035
C	0.45	-	0.6	.018	-	.024
C2	1.23	-	1.48	.048	-	.058
C3	2.2	-	2.6	.087	-	.102
D	8.9	-	9.9	.350	-	.390
E	9.9	-	10.3	.390	-	.406
F	6.3	-	6.9	.248	-	.272
G	2.4	-	2.7	.094	-	.106
H	28.0	-	29.8	1.102	-	1.173
L1	3.1	-	3.7	.122	-	.146
L2	1.14	-	1.7	.045	-	.067
L3	2.65	-	2.95	.104	-	.116
R	3.45	-	3.65	.136	-	.144

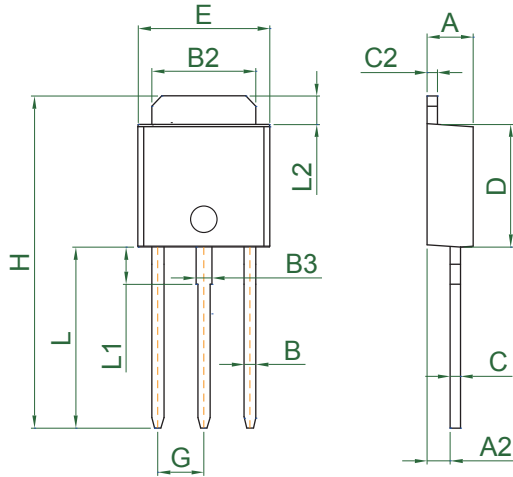
TO-92



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.3	-	5.2	.169	-	.205
B	4.3	-	5.33	.169	-	.210
C	3.18	-	4.19	.125	-	.165
D	0.254	-	0.55	.010	-	.022
E	0.3	-	0.8	.012	-	.032
F	1.0	-	1.4	.039	-	.055
G	1.14	-	1.4	.045	-	.055
H	-	2.3	-	-	.091	-
J	0.3	-	0.51	.012	-	.020
K	12.7	-	15.0	.500	-	.591
N	2.04	-	2.66	.080	-	.105
P	1.86	-	2.06	.073	-	.081
R	-	-	1.5	-	-	.059
V	3.43	-	4.5	.135	-	.177

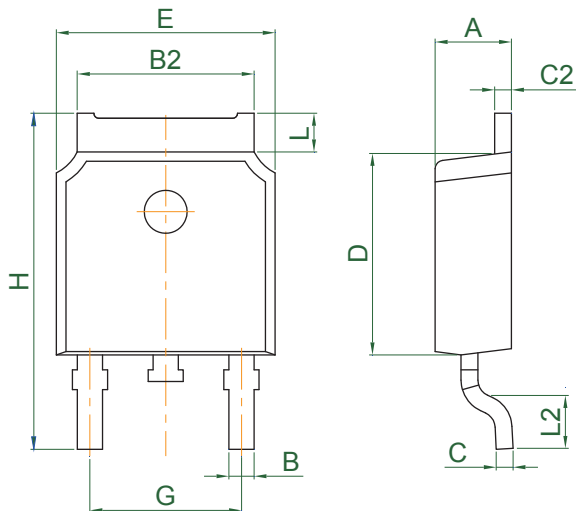
Package Outline Dimensions

TO-251



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2	-	2.4	.087	-	.095
A2	0.9	-	1.5	.035	-	.059
B	0.5	-	0.7	.020	-	.028
B2	5.1	-	5.4	.201	-	.213
B3	0.7	-	1.0	.028	-	.039
C	0.45	-	0.62	.018	-	.024
C2	0.66	-	0.94	.026	-	.037
D	6.0	-	6.2	.236	-	.244
E	6.4	-	6.7	.252	-	.264
G	2.2	-	2.4	.087	-	.095
H	15.25	-	15.65	.600	-	.616
L	7.8	-	8.8	.307	-	.346
L1	1.5	-	1.9	.059	-	.075
L2	1.1	-	1.55	.043	-	.061

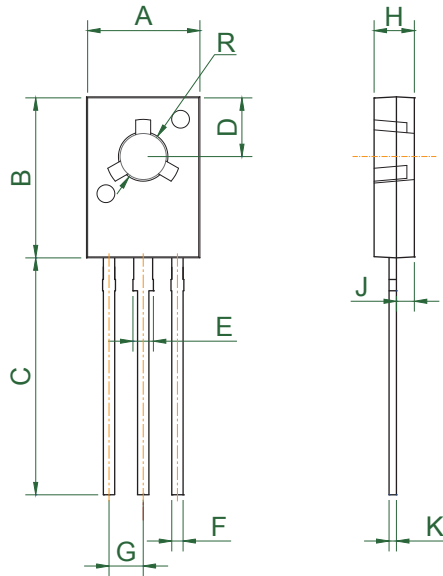
TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.1	-	2.5	.083	-	.098
B	0.55	-	0.96	.022	-	.038
B2	4.98	-	5.58	.196	-	.220
C	0.4	-	0.62	.016	-	.024
C2	0.37	-	0.99	.015	-	.039
D	5.8	-	6.4	.228	-	.252
E	6.3	-	6.9	.248	-	.272
G	4.4	-	4.7	.173	-	.185
H	9.35	-	10.7	.368	-	.421
L	1.09	-	1.5	.043	-	.059
L2	1.35	-	2.2	.053	-	.087

Package Outline Dimensions

TO-126



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.4	-	8.15	.291	-	.321
B	10.6	-	11.2	.417	-	.441
C	15.3	-	16.3	.602	-	.642
D	3.6	-	4.1	.142	-	.161
E	1.17	-	1.47	.046	-	.058
F	0.66	-	0.86	.026	-	.034
G	2.15	-	2.45	.085	-	.097
H	2.5	-	2.9	.098	-	.114
J	1.1	-	1.5	.043	-	.059
K	0.45	-	0.6	.018	-	.024
R	3.0	-	3.5	.118	-	.138