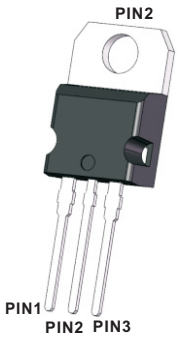
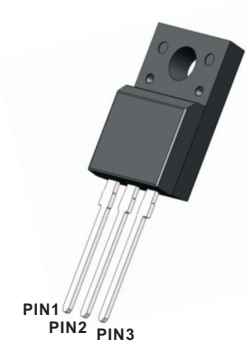
12A Bipolar TRIAC Series

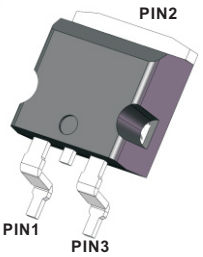
TO-220-3L (Suffix:C)



TO-220F-3L (Suffix:F)



TO-263-2L (Suffix:G)



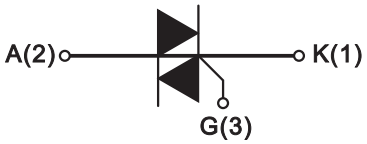
Description

With high ability to withstand the shock loading of large current, this series triacs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.

Mechanical data

- Case: TO-220-3L
- Approx. Weight: 2.04g (0.072oz)
- Case: TO-220F-3L
- Approx. Weight: 1.767g (0.062oz)
- Case: TO-263-2L
- Approx. Weight: 1.52g (0.053oz)
- Lead free finish, RoHS compliant
- Case Material: “Green” molding compound, UL flammability classification 94V-0,“Halogen-free”.

Application Circuit



RoHS COMPLIANT

■**Absolute Maximum Ratings** (Operating temperature range applies unless otherwise specified)

Parameter	Symbols	Ratings	Unit
Repetitive peak off-state voltage	V_{DRM}	600/800/1200	V
Repetitive peak reverse voltage	V_{RRM}	600/800/1200	V
Non repetitive surge peak Off-state voltage	V_{DSM}	V_{DRM}+100	V
Non repetitive peak reverse voltage	V_{RSM}	V_{DSM}+100	V
RMS on-state current	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (full cycle, f=50Hz)	I_{TSM}	120	A
I^2t value for fusing (tp=10ms)	I^2T	78	A^2S
Peak gate current (f≥50Hz, duty cycle≤10%)	I_{GM}	4	A
Peak gate power (f≥50Hz, duty cycle≤10%)	P_{GM}	5	W
Average gate power dissipation(Tj=125℃)	$P_{G(AV)}$	1	W
Operating junction temperature range	T_J	-40 to +125	°C
Storage junction temperature range	T_{STG}	-40 to +150	°C

NOTE 1: When we parallel connect a ≤1KΩ resistor between Gate and Cathode, the Tj can reach 125℃; if without this resistor, the Tj only can reach 110℃.

■**Electrical Characteristics** (TJ=25℃ Unless Otherwise Specified)

3 Quadrants

Symbols	Test Condition	Quadrant		BW	CW	SW	TW	Unit
I_{GT}	V_D=12V R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	Max	50	35	10	5	mA
V_{GT}			Max	1.3				V
V_{GD}	V_D=V_{DRM} Tj=125℃ RL =3.3KΩ	Ⅰ-Ⅱ-Ⅲ	Min	0.2				V
I_L	I_G=1.2 I_{GT}	Ⅰ-Ⅲ	Max	80	50	30	20	mA
		Ⅱ		90	60	40	30	
I_H	I_T=0.1A		Max	60	40	20	15	mA
dV/dt	V_D=2/3 V_{DRM} Tj=125℃ Gate open		Min	1000	500	200	100	V/us

4 Quadrants

Symbols	Test Condition	Quadrant		B	C	Unit
I_{GT}	V_D=12V R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	Max	50	25	mA
		Ⅳ		70	50	
V_{GT}		All		1.3		V
V_{GD}	V_D=V_{DRM} Tj=125℃ RL =3.3KΩ	All	Min	0.2		V
I_L	I_G=1.2 I_{GT}	Ⅰ-Ⅲ-Ⅳ	Max	50	40	mA
		Ⅱ		100	80	
I_H	I_T=0.1A		Max	50	25	mA
dV/dt	V_D=2/3 V_{DRM} Tj=125℃ Gate open		Min	500	200	V/us

■**Static Characteristics**

Symbols	Parameter		Value(Max)			Unit
			-600V	-800V	-1200V	
V_{TM}	I_T=17A tp=380μs	TJ=25°C	1.5			V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	TJ=25°C	5	5	10	uA
I_{RRM}		TJ=125°C	1	1	2	mA

■**Thermal Resistances**

Symbols	Parameter		Value(Max)	Unit
$R_{th(j-c)}$	junction to case	TO-220-3L TO-263-2L	1.4	°C/W
		TO-220F-3L	2.5	

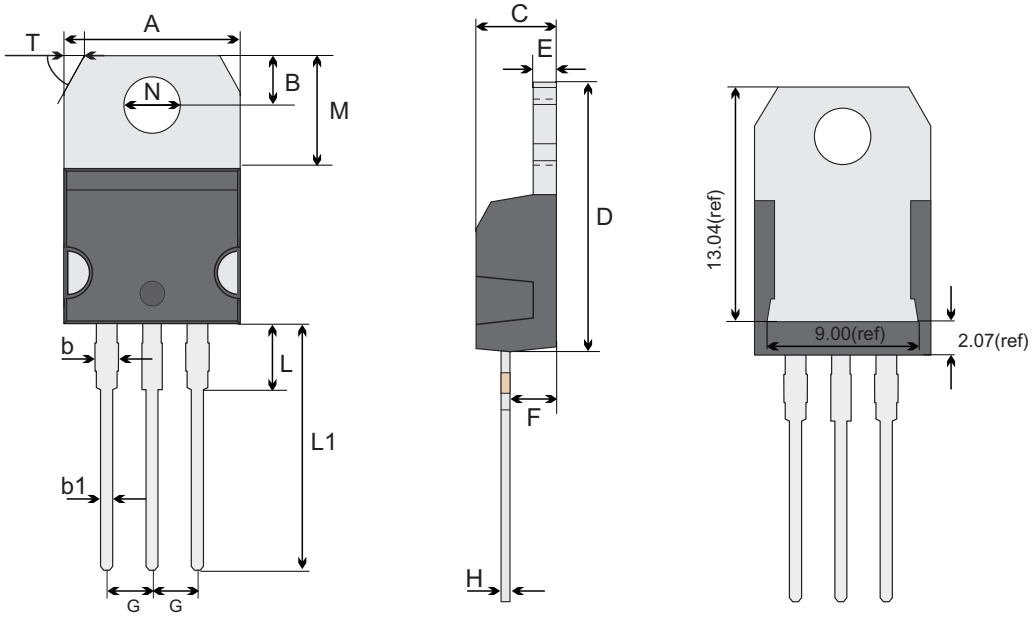
■**Ordering Information**

T **16** **C** **-6** **BW**

- T: T:TRIAC
- 16: 12:$I_{T(RMS)}$
- C: C:TO-220-3L; F:TO-220F-3L; G:TO-263-2L
- -6: -6:600V; -8:800V; -12:1200V
- BW: BW:I_{GT1-3}≤50mA; CW:I_{GT1-3}≤35mA; SW:I_{GT1-3}≤10mA; TW:I_{GT1-3}≤5mA; B:I_{GT1-3}≤50mA,I_{GT4}≤70mA; C:I_{GT1-3}≤25mA,I_{GT4}≤50mA

Package Outline
Through Hole Package ; 3 leads

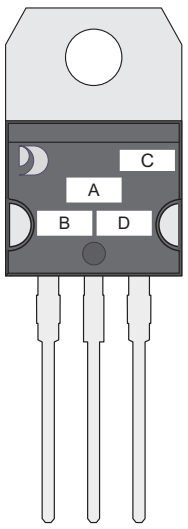
TO-220-3L



TO-220-3L mechanical data

UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N	T
mm	max	10.28	2.84	1.72	0.9	4.65	15.54	1.37	2.79	2.64	0.6	3.88	13.13	6.39	3.82 typ.	1.19 58° ref.
	typ	10.18	2.74	1.57	0.8	4.45	15.34	1.27	2.59	2.54	0.5	3.68	12.93	6.19		
	min	10.08	2.64	1.42	0.7	4.25	15.14	1.17	2.39	2.44	0.4	3.48	12.73	5.99		
mil	max	405	112	68	35	183	612	54	110	104	24	153	517	252	150 typ.	47 58° ref.
	typ	401	108	62	31	175	604	50	102	100	20	145	509	244		
	min	397	104	56	28	167	596	46	94	92	16	137	501	236		

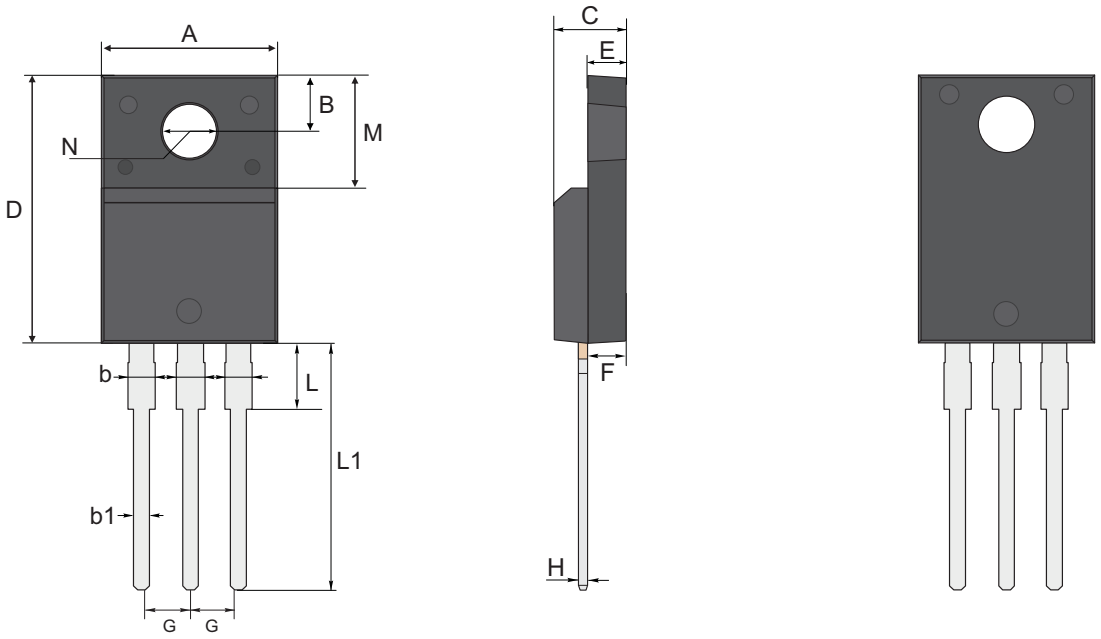
Marking Diagram



Unmarkable Surfacea
Marking Composition Field
a:Ejector Pin Mark
A: Marking Area
B: Lot Code
C: Additional Information
D: Date Code (YWW)
Y: Years(0~9)
WW: Week

Package Outline
Through Hole Package ; 3 leads

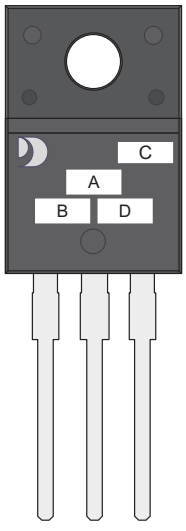
TO-220F-3L



TO-220F-3L Mechanical data

UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.98	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.38	
mil	max	405	133	57	35	193	633	108	108	104	24	112	539	275	125 typ.
	typ	401	129	53	31	185	625	100	100	100	20	104	531	263	
	min	397	125	49	28	177	617	92	92	96	16	96	524	251	

Marking Diagram



Unmarkable Surfacea
Marking Composition Field
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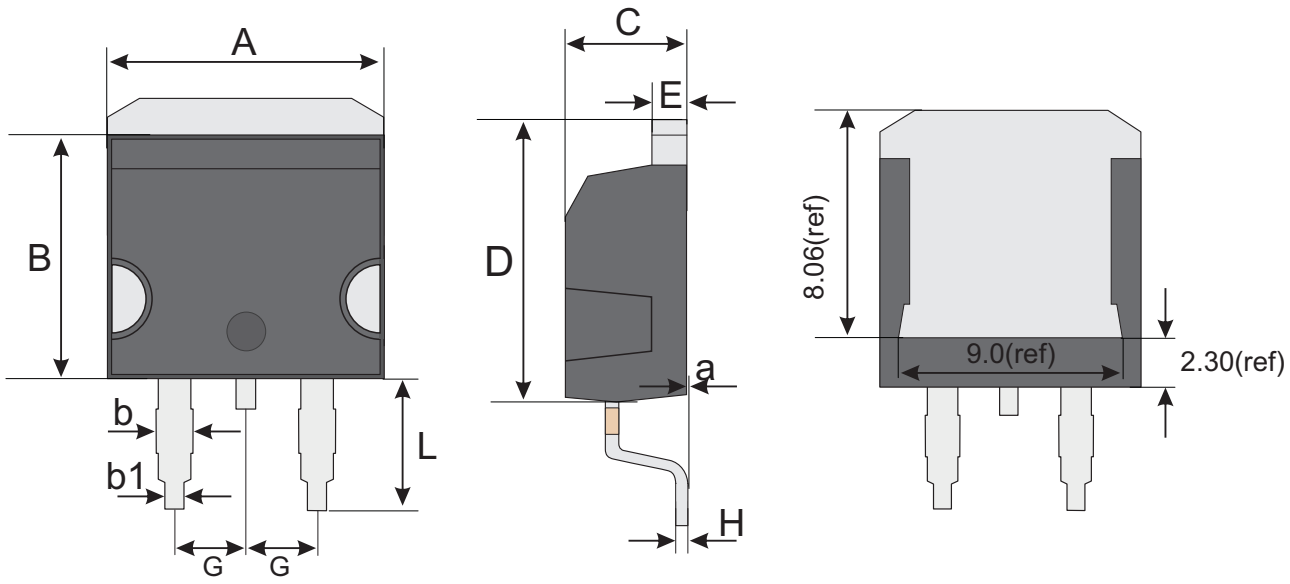
Package Outline
Plastic surface mounted package; 2 leads

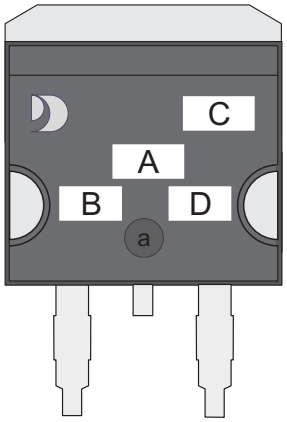
TO-263-2L



TO-263-2L mechanical data

UNIT		A	B	b	b1	C	D	E	G	H	L	a
mm	max	10.28	9.35	1.67	0.9	4.65	10.56	1.37	2.64	0.6	5.35	0.1 ref.
	typ	10.18	9.15	1.47	0.8	4.45	10.36	1.27	2.54	0.5	5.15	
	min	10.08	8.95	1.27	0.7	4.25	10.16	1.17	2.44	0.4	4.95	
mil	max	405	368	66	35	183	416	54	104	24	211	4.0 ref.
	typ	401	360	58	31	175	409	50	100	20	203	
	min	397	352	50	28	167	400	46	96	16	195	

Marking Diagram



Unmarkable Surfacea
Marking Composition Field
a:Ejector Pin Mark
A: Marking Area
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