

DT4T10T, DT4T10D, DT4T10F, DT4T10C

DT4T10X Series TRIAC SILICON BIDIRECTIONAL THYRISTORS

General description

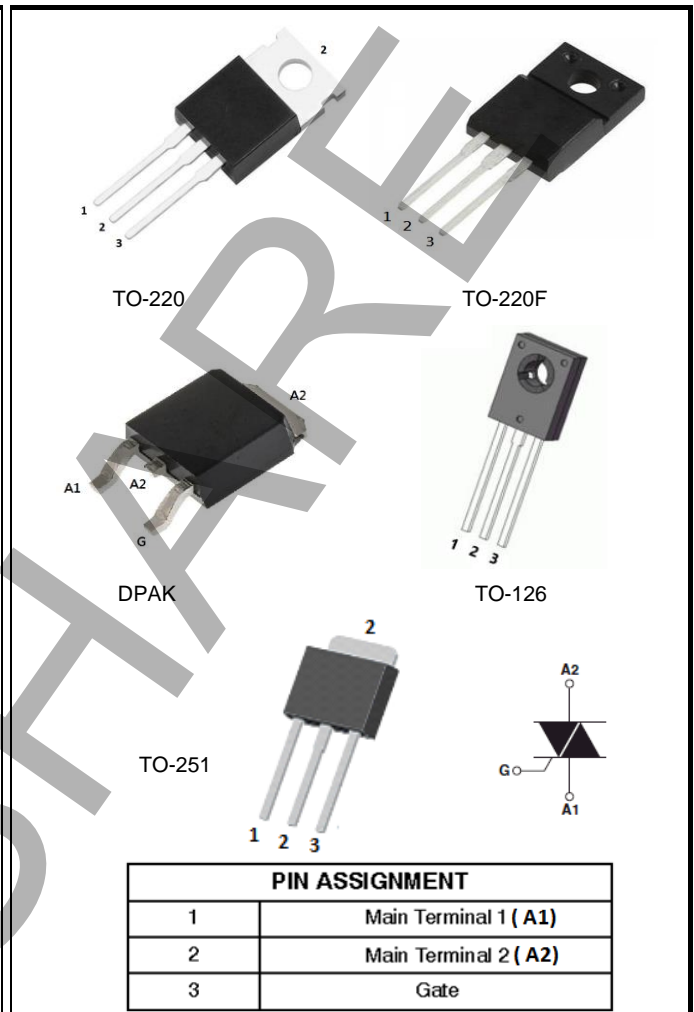
This products TRIAC are packages for third quadrant 4A by logic level triggered, DT4T10x are high commutation performance without snubber circuit. It can be controlled by phase angle trigger or on/off trigger.

FEATURES

- Passivated die for reliability and uniformity
- Three-quadrant triggering, Over 1000V/ 800V V_{DRM}/V_{RRM}
- 150 Degree C operation temperature
- Without snubber circuit
- “Green” molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead free in RoHS II 2015/863/EU compliant
- Moisture sensitivity meets industry standard IPC/JEDEC J-STD-020

APPLICATIONS

- General purpose AC switch control
- Control loads in Motor, Fan, and Pump.
- Solenoid drivers
- LED Dimming
- Heaters
- Inrush current limiting circuits



ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified.)

Absolute Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Peak repetitive off-state voltage (T _j = -40 to 150°C, Full sine wave, 50 to 60 Hz; Gate open) (Note 1)	V_{DRM} V_{RRM}	1000/ 800	V
On-stage RMS current (Full sine wave, T _c = 100°C)	$I_{T(RMS)}$	4	A
Peak non-repetitive surge current (one full cycle 60 Hz, T _j = 25°C)	I_{TSM}	25	A
Circuit fusing consideration (t = 8.3ms)	I^2T	5.18	A ² S
Operating junction temperature range	T _j	-40 to +150	°C
Storage temperature range	T _{STG}	-40 to +150	°C

Note :

- (1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

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CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)



ON Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Peak forward on-state voltage (I _{TM} = 4 A @ T _j = 25°C)	V _{TM}	--	--	1.7	V
V _D = V _{DRM} , R _L =100Ω, T _j =150°C	V _{GD}	0.25	--	--	V
Gate trigger current (V _{AK} = 12V, R _L =100Ω)	I _{GT1} I _{GT2} I _{GT3}	--	--	10 10 10	mA
Gate trigger voltage (V _{AK} = 12V, R _L =100Ω)	V _{GT1} V _{GT2} V _{GT3}	--	--	1.1	V
Holding current (V _{AK} = 12V, R _L =100Ω)	I _{H1} I _{H3}	--	--	10	mA
Latching current (V _{AK} = 12V, R _L =100Ω)	I _{L1} I _{L2} I _{L3}	--	--	20 20 20	mA

Dynamic Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Critical rate of rise of off-stage voltage (V _{AK} = 67% rated V _{DRM} , T _j = 150°C, gate open)	dv/dt	200	--	--	V/us
Critical rate of rise of on-state current, (V _{DRM} =maximum V _{DRM} , T _j = 150°C)	di/dt(s)	50	--	--	A/us
T _j =150°C, gate open, Without Snubber	di/dt(c)	3	--	--	A/ms

Thermal Characteristics

PARAMETER	SYMBOL	VALUE		UNIT
Thermal resistance from junction to lead (note 1)	R _{th(j-L)}	Typ	15	°C/W
Junction to case (DC) (note 1)	R _{th(j-c)}	TO-220	15	
		DPAK	26	
Maximum lead temperature for soldering purposes (1/8" form case for 10 seconds)	T _L	Max	260	°C

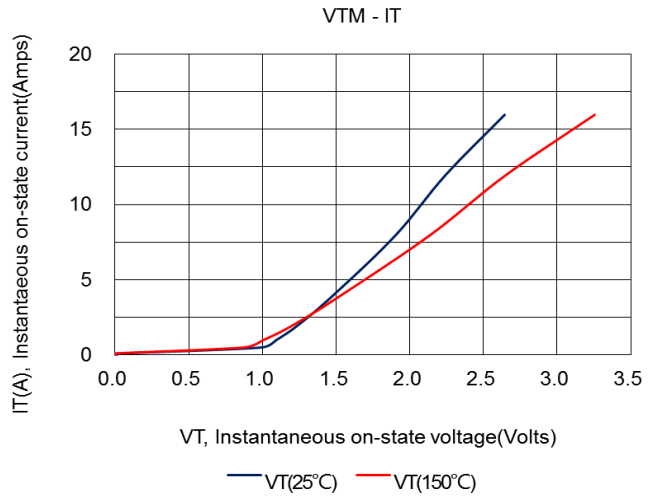
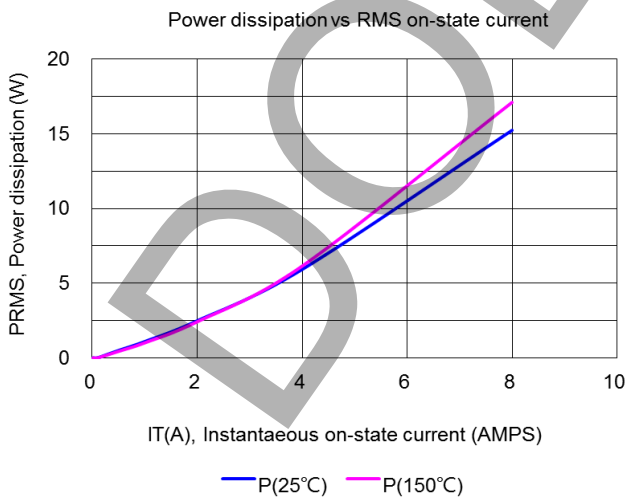
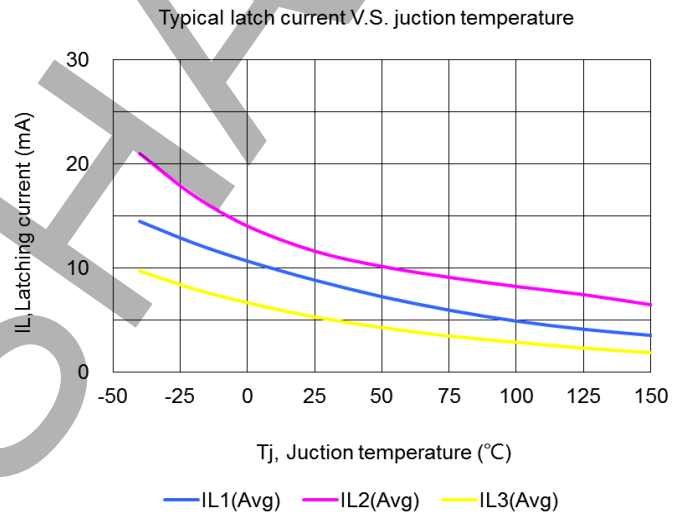
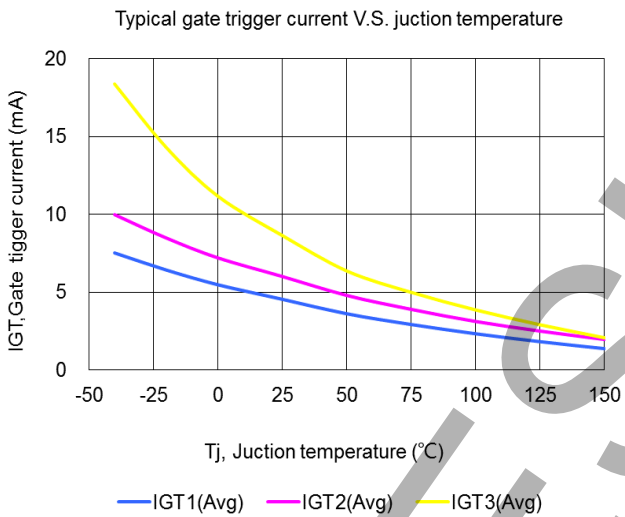
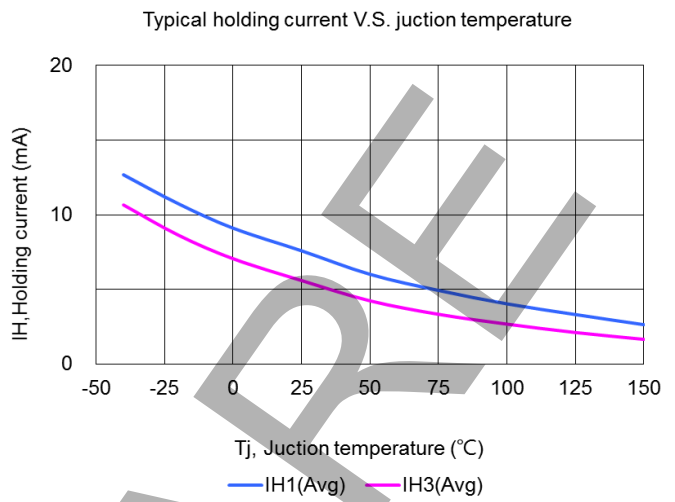
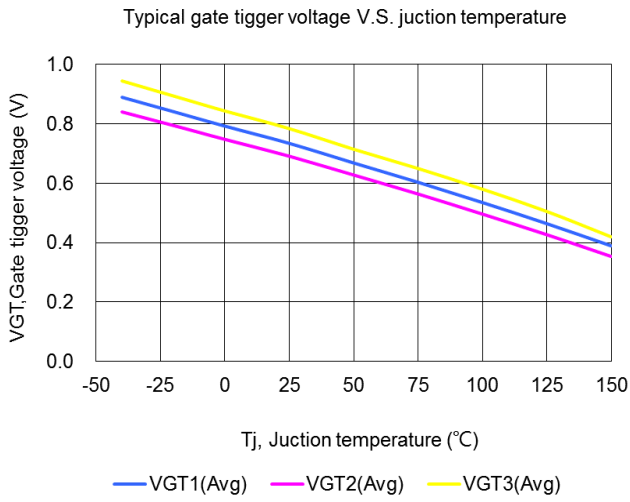
Note 1: without heatsink

Static Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Threshold Voltage (T _j = 150°C)	V _{to}	--	--	1	V
Dynamic resistors (T _j = 150°C)	R _d	--	--	200	mΩ
Peak repetitive forward or reverse blocking current (V _{AK} = rated V _{DRM} and V _{RRM} , gate open)	T _j = 25°C	I _{DRM}	--	5	uA
	T _j = 150°C	I _{RRM}	--	2	mA

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CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)

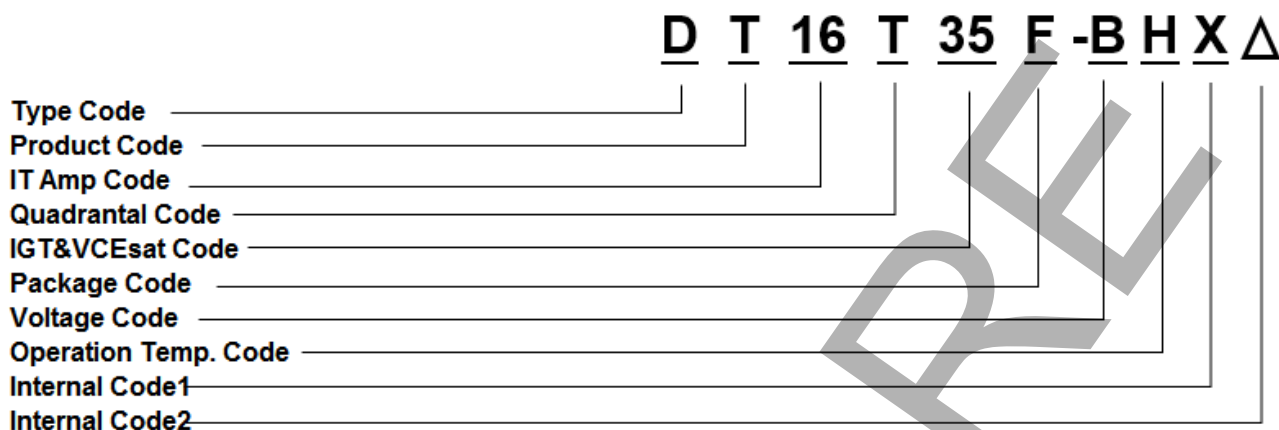


DT4T10T, DT4T10D, DT4T10F, DT4T10C

CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)



Ordering information scheme



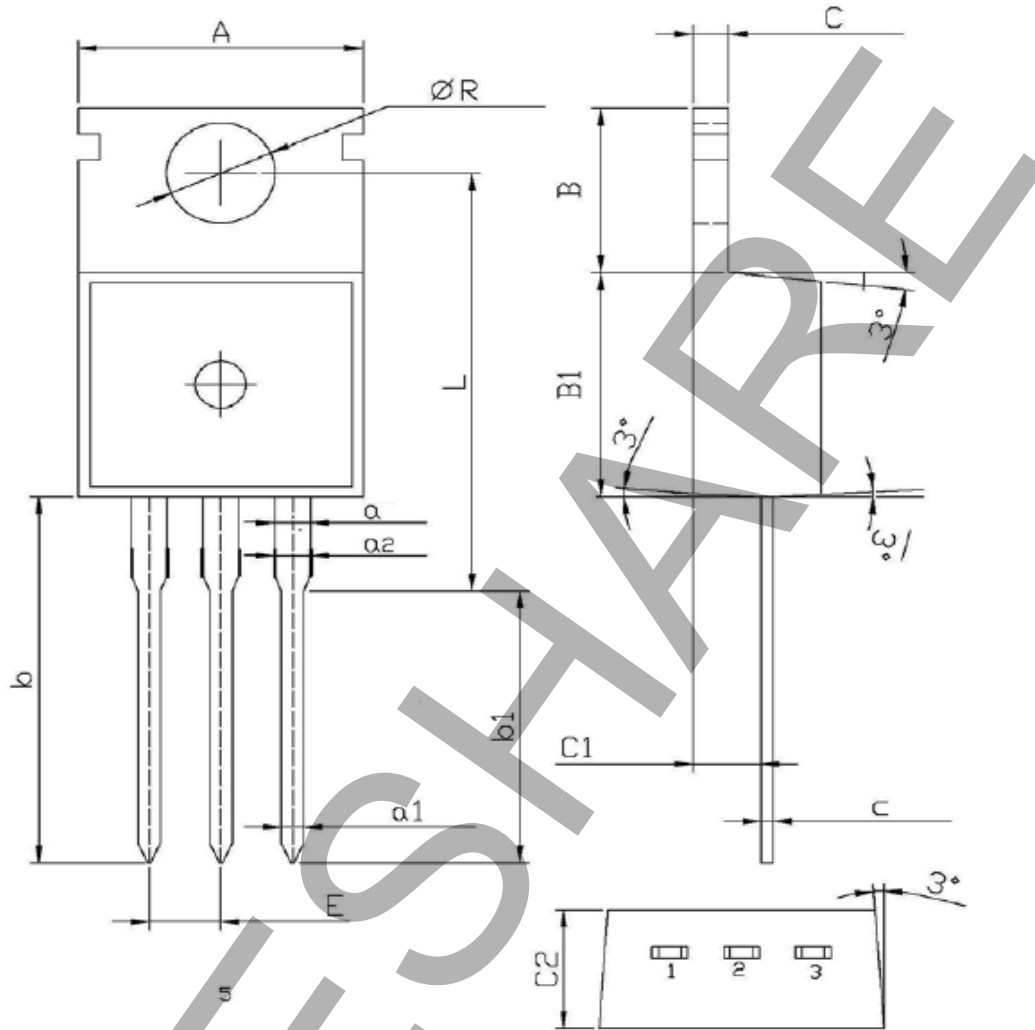
- Type Code: Doeshare Standar products
- Product Code: T for Triac series
- IT Amp Code: 16 for 16A, 1 for 1A
- Quadrantal Code: T for 3Q, F for 4Q
- IGT&VCEsat Code: 35 means Igt 35mA, 5 means Igt 5mA
- Package Code: A=>TO-92, C=>TO-126, D=> DPAK, E=>D2PAK, F=> TO-220F, G=>SOT-223
M=>ITO-3P, P=>TO-3P, T=> TO-220, Y=>TO251
- Voltage Code: A=> 600V, B=> 800V, C=> 1000V
- Operation Temp Code: None=>125°C, H=>150°C

DT4T10T-CH

CHARACTERISTIC & CURVES (Tj = 25°C, unless otherwise specified.)



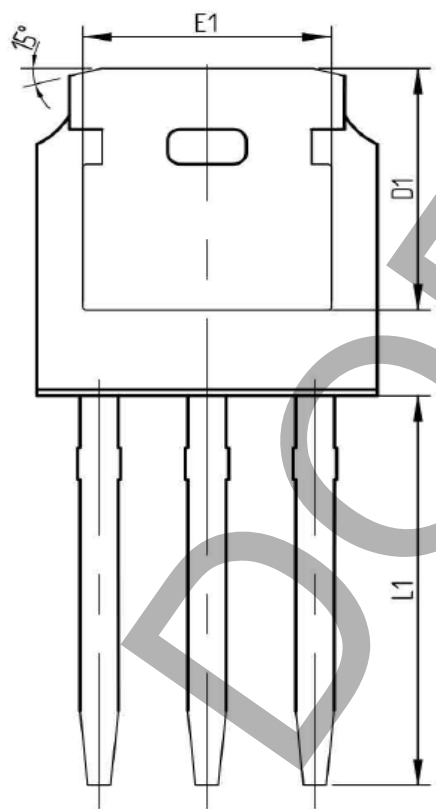
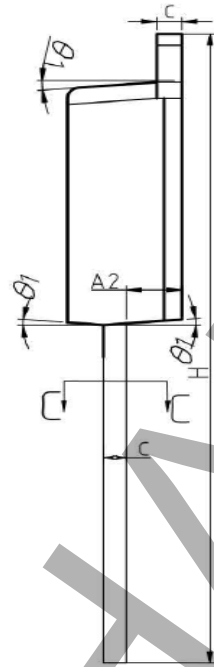
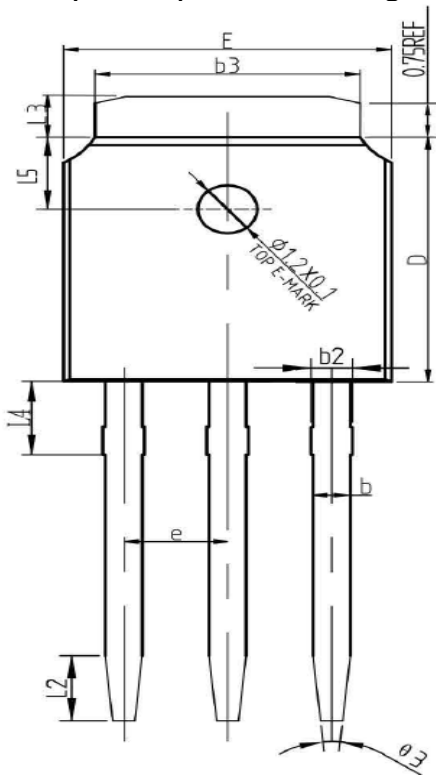
TO-220C Plastic Package



DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	9.7	10.4	a	1.22	1.32	a2	1.18	1.45
B	6.13	6.82	a1	0.7	0.92	C2	4.3	4.71
C	1.2	1.42	b1	9.6	10.6	E	2.34	2.74
B1	9.0	9.4	c	0.38	0.65	R	3.55	3.78
b	12.6	13.6	C1	2.2	2.75	L	15.7	16.14

DT4T10T, DT4T10D, DT4T10F, DT4T10C
CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)

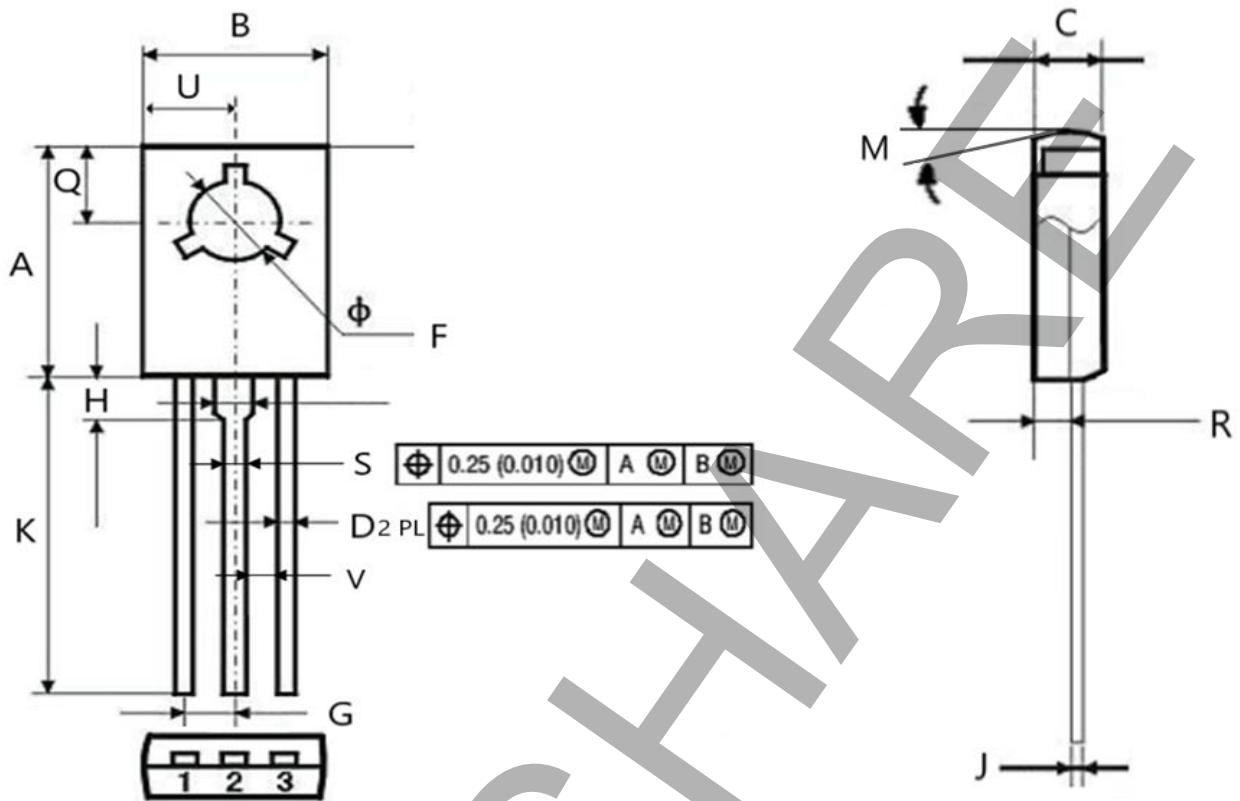
IPAK(TO-251) Plastic Package



SYMBOL	mm		
	MIN	NOM	MAX
*A	2.20	2.30	2.38
*A2	0.97	1.07	1.17
*b	0.72	0.78	0.85
b1	0.71	0.76	0.81
*b2	0.72	0.88	0.95
*b3	5.23	5.33	5.46
*c	0.47	0.53	0.58
c1	0.46	0.51	0.56
*D	6.00	6.10	6.20
D1	5.30REF		
*E	6.50	6.60	6.70
E1	4.70	4.83	4.92
*e	2.286BSC		
*H	16.10	16.40	16.60
*L1	9.20	9.40	9.60
L2	1.25	1.35	1.45
*L3	0.90	1.02	1.22
L4	0.95	1.05	1.15
L5	1.70	1.80	1.90
theta 1	5°	7°	9°
theta 2	5°	7°	9°
theta 3	11°	13°	15°

DT4T10T, DT4T10D, DT4T10F, DT4T10C
 CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)

TO-126 Plastic Package



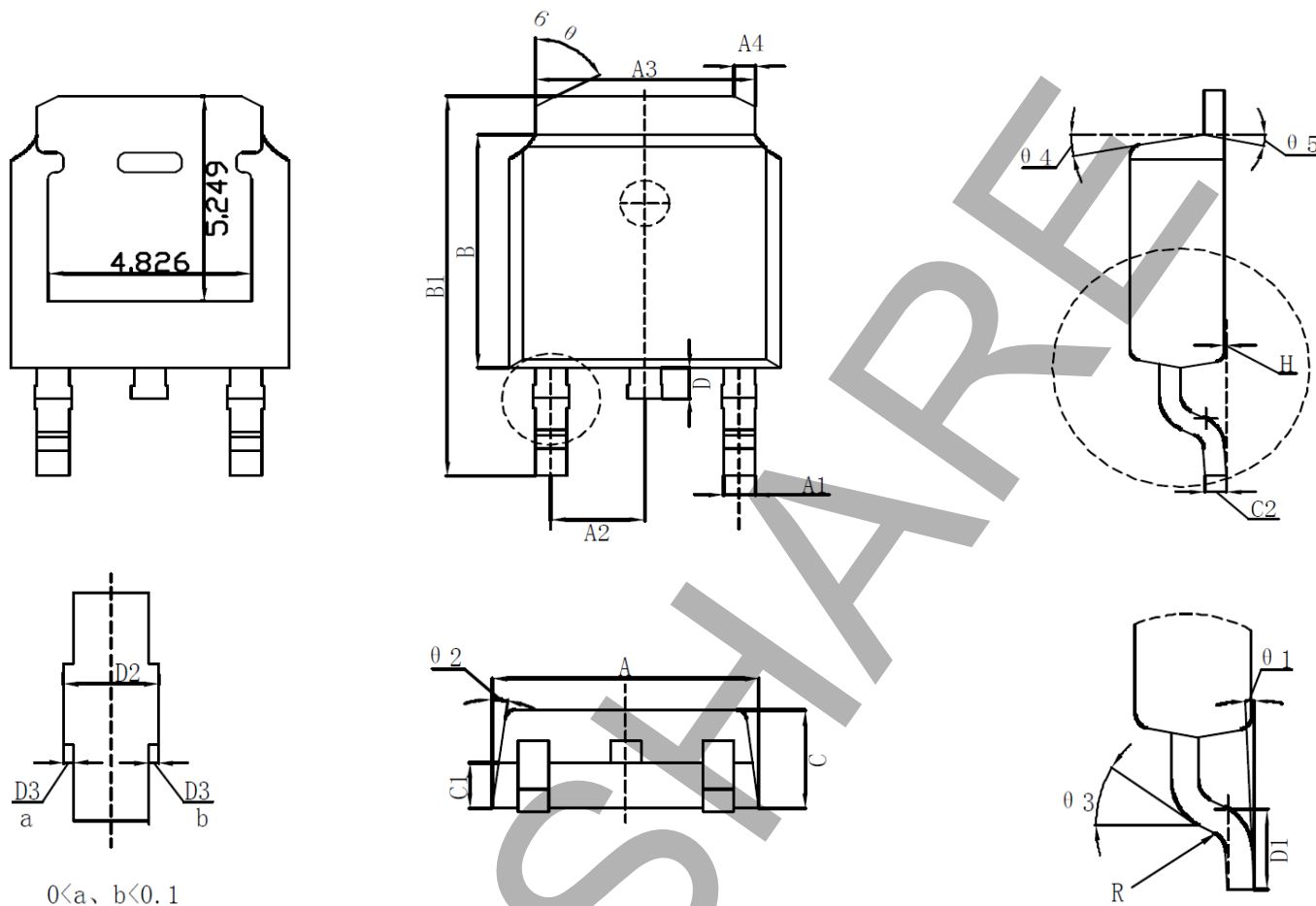
DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.425	0.433	10.80	11.04	K	0.575	0.655	14.61	16.63
B	0.295	0.323	7.50	8.20	M	5°TYP		5°TYP	
C	0.100	0.118	2.54	3.0	Q	0.148	0.158	3.76	4.01
D	0.020	0.026	0.51	0.66	R	0.045	0.065	1.15	1.65
F	0.115	0.130	2.93	3.30	S	0.025	0.035	0.64	0.88
G	0.094BSC		2.39BSC		U	0.145	0.161	3.69	4.10
H	0.050	0.095	1.27	2.41	V	0.040	-	1.02	-
J	0.015	0.025	0.39	0.63	-	-	-	-	-

DT4T10T, DT4T10D, DT4T10F, DT4T10C

CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)



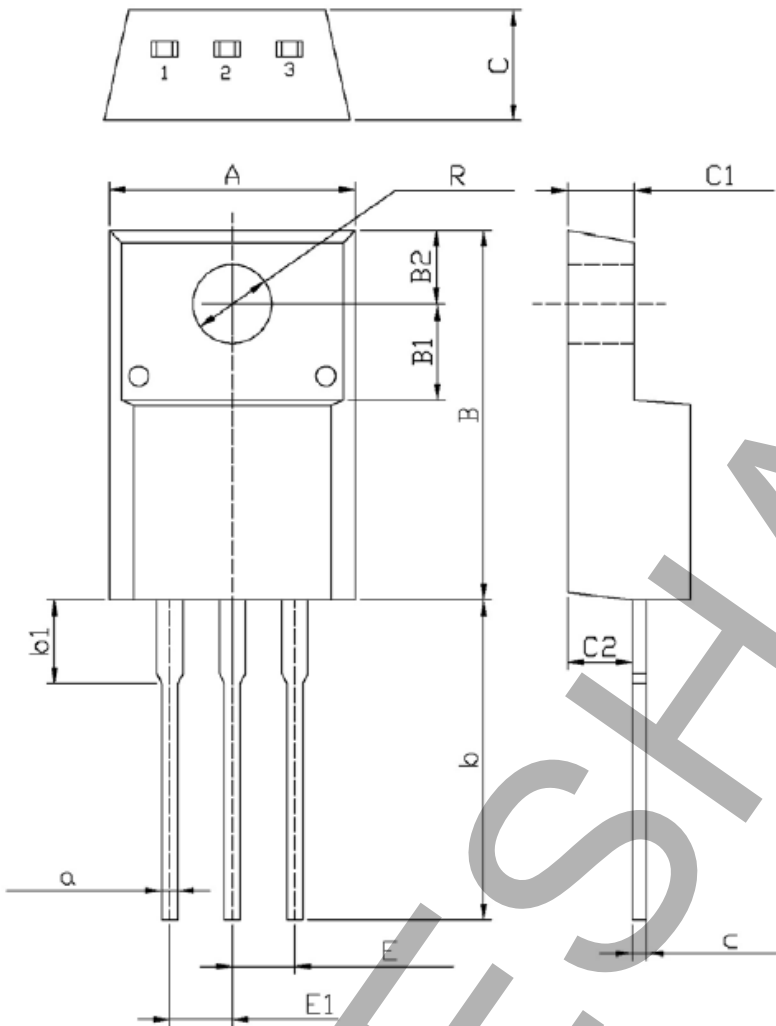
DPAK(TO-252) Plastic Package



DIM	Millimeters		DIM	Millimeters		DIM	Millimeters	
	Min	Max		Min	Max		Min	Max
A	6.50	6.70	C1	0.967	1.087	θ1	0° ~ 8°	
A1	0.71	0.81	C2	0.498	0.518	θ2	8.5° TYP4	
A2	2.236	2.336	D	0.70	0.90	θ3	25° TYP	
A3	5.284	5.384	D1	1.40	1.60	θ4	10° TYP	
A4	0.75	0.85	D2	0.81	0.91	θ5	10° TYP	
B	6.00	6.20	D3	0.05TYP		θ6	70° TYP	
B1	9.80	10.10	H	0.00	0.10			
C	2.20	2.40	R	0.40TYP				

DT4T10T, DT4T10D, DT4T10F, DT4T10C
CHARACTERISTIC & CURVES (T_j = 25°C, unless otherwise specified.)

TO-220F Plastic Package



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
C	4.3	4.7	b1	2.9	3.9
A	9.7	10.3	a	0.55	0.75
B	14.7	15.3	E	2.29	2.79
B1	3.8	4.0	E1	2.29	2.79
B2	2.9	3.1	C1	2.5	2.9
R	3.0	3.4	C2	2.5	2.7
b	12.5	13.5	c	0.5	0.7

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