3 Quadrants Standard TRIAC

FEATURES

- Repetitive Peak Off-State Voltage : 600V/800V
- R.M.S On–State Current ($I_{T(RMS)}$ = 20A)
- Gate Trigger Current : 50mA
- High commutation capability.

V_{DRM} = 600V/800V
$I_{T(RMS)}$ = 20 A
I_{TSM} = 258 A
I_{GT} = 50mA

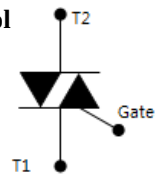
Applications

General purpose of AC switching, heating control, motor control, etc

General Description

Din-Tek's standard TRIAC product is a glass passivated device, has a high commutative performance, stable gate triggering level to temperature and high off state voltage. It is generally suitable for power and phase control in ac application

Symbol



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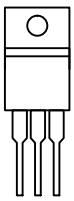
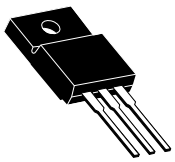


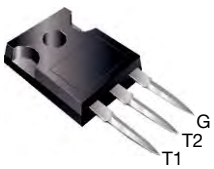
T1 T2 G

TO-220 FULLPAK



T1 T2 G

TO-247AC



Absolute Maximum Ratings (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings		Unit
			DTJ20A60	DTJ20A80	
V_{DRM}	Repetitive Peak Off-State Voltage	Sine wave, 50/60Hz, Gate open	600	800	V
V_{RRM}	Repetitive Peak Reverse Voltage		600	800	V
$I_{T(AV)}$	Average On-State Current	Full sine wave, T_C = 97.6°C	18.5		A
$I_{T(RMS)}$	R.M.S. On-State Current		20		A
I_{TSM}	Surge On-State Current	½ cycle, 50Hz/60Hz, Sine wave, Non repetitive	250/258		A
I^2t	Fusing Current	t = 10ms	152		A^2S
P_{GM}	Forward Peak Gate Power Dissipation	T_J = 125 ˚C	5		W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	T_J = 125 ˚C, over any 20ms	1		W
I_{FGM}	Forward Peak Gate Current	T_J = 125 ˚C, pulse width ≤ 20us	2		A
V_{RGM}	Reverse Peak Gate Voltage	T_J = 125 ˚C, pulse width ≤ 20us	10		V
T_J	Operating Junction Temperature		-40~+150		°C
T_{STG}	Storage Temperature		-40~+150		°C

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{DRM}$	T_J=25°C	-	-	50	uA
			T_J=125°C	-	-	5	mA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{DRM}$	T_J=25°C	-	-	50	uA
			T_J=125°C	-	-	5	mA
I_{GT}	Gate Trigger Current	V_D = 12V, R_L=330Ω	1+, 1-, 3-	-	-	50	mA
V_{GT}	Gate Trigger Voltage	V_D = 12V, R_L=330Ω	1+, 1-, 3-	-	-	2.0	V
V_{GD}	Non-Trigger Gate Voltage[1]	V_D = 12V, R_L=330Ω, T_J=125°C		0.2	-	-	V
V_{TM}	Peak On-State Voltage	I_T = 23A, I_G = 50mA		-	1.2	1.6	V
dv/dt	Critical Rate of Rise of Off-State Voltage	V_D = 2/3 V_{DRM}, T_J=125°C		200	-	-	V/us
I_H	Holding current	I_T= 0.2A		-	50	-	mA

Notes :
1. Pulse Width ≤ 1.0ms, Duty Cycle ≤ 1%

Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	Junction to Case			2.1	°C/W
$R_{\theta JA}$	Thermal Resistance	Junction to Ambient			58	°C/W

Typical Characteristics

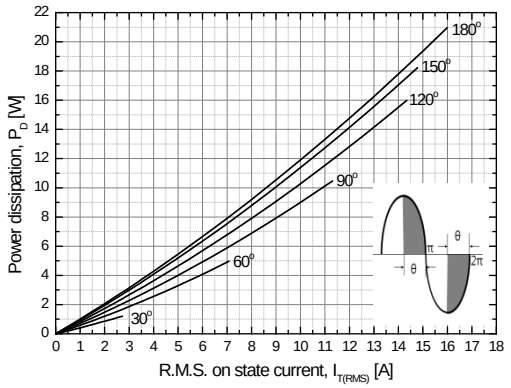


Fig 1. R.M.S. current vs. Power dissipation

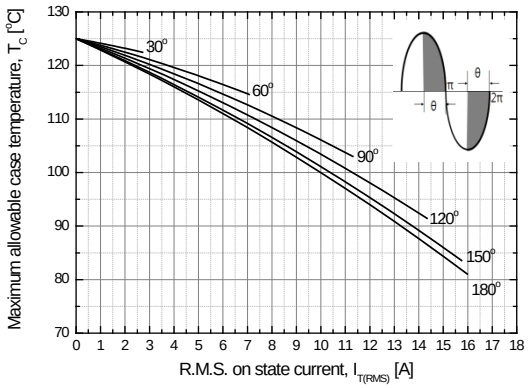


Fig 2. R.M.S. current vs. Case temperature

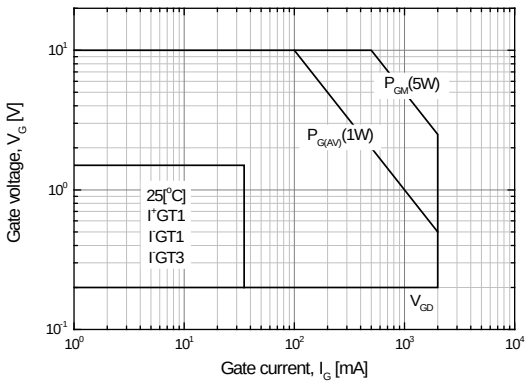


Fig 3. Gate power characteristics

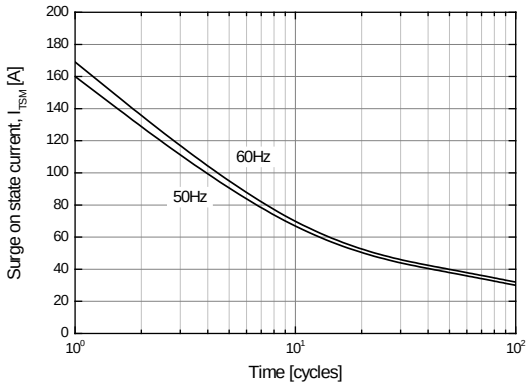


Fig 4. Surge on state current rating (Non-repetitive)

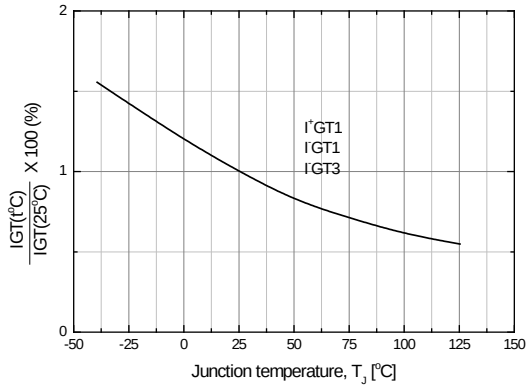


Fig 5. Gate trigger current vs. junction temperature

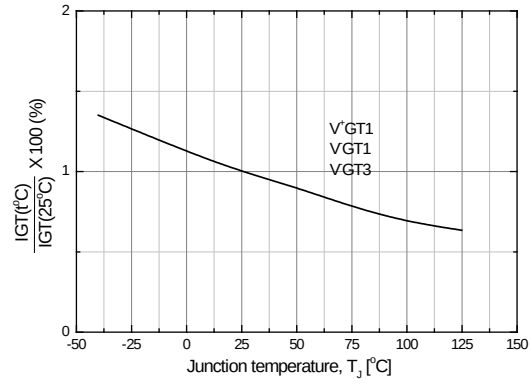


Fig 6. Gate trigger voltage vs. junction temperature

Typical Characteristics

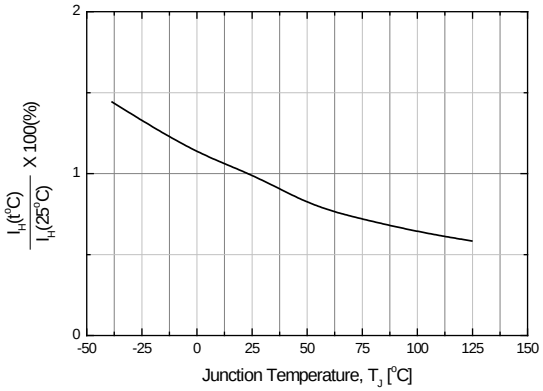


Fig 7. Holding current vs. Junction temperature

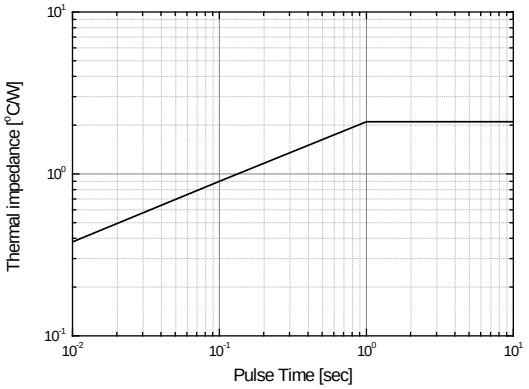


Fig 8. Thermal Impedance vs. pulse time

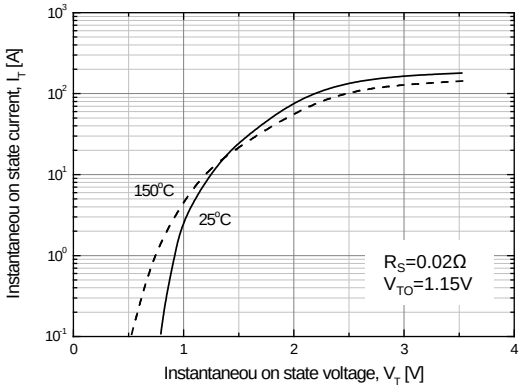
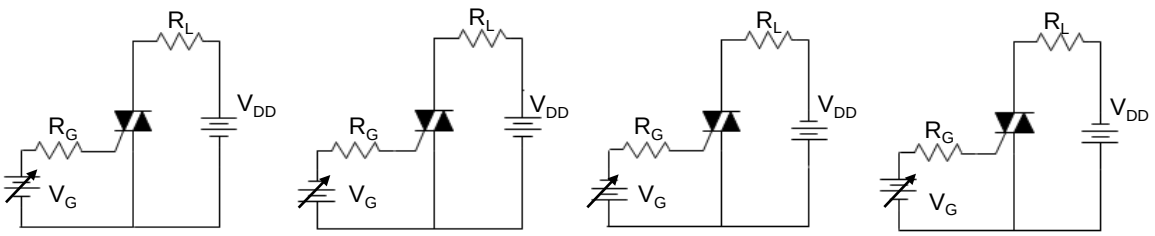


Fig 9. Instantaneous on state current vs. Instantaneous on state voltage

Measurement of gate trigger current



(1) Quadrant I (2) Quadrant II (3) Quadrant III (4) Quadrant IV

Note. Whole parameter and test condition can not be over absolute maximum ratings in this datasheet.

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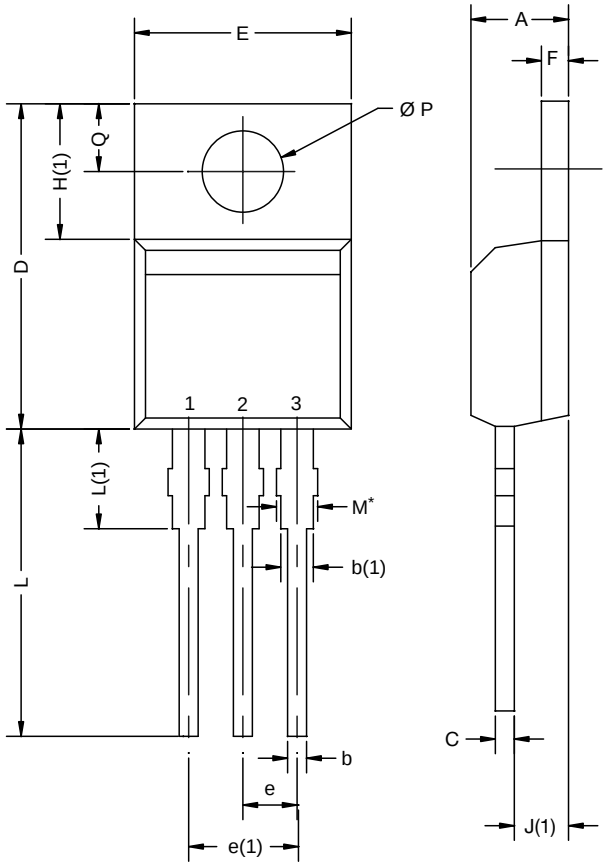
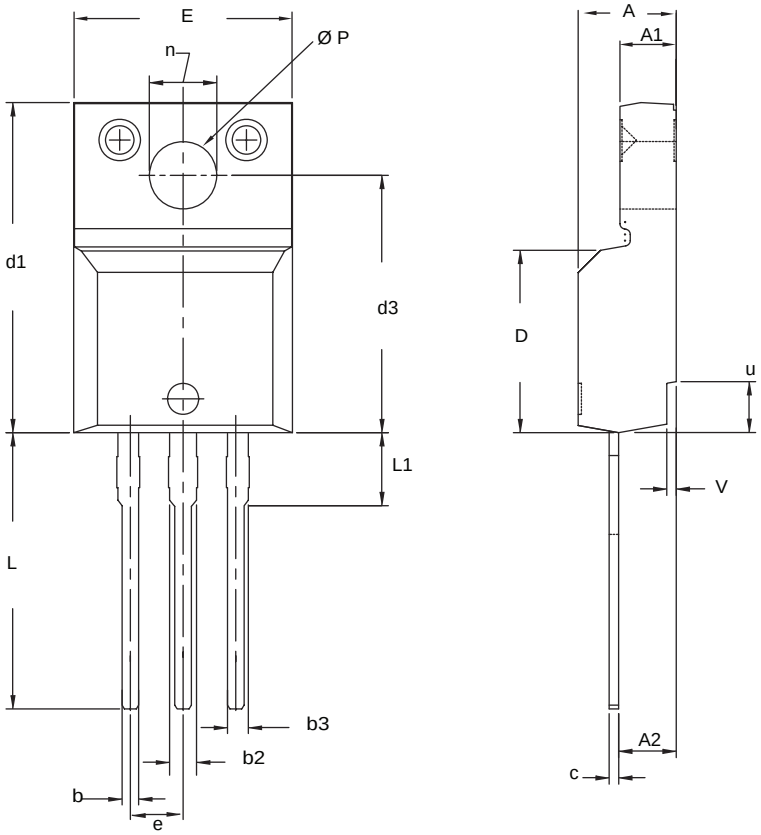


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.25	4.65	0.167	0.183
b	0.69	1.01	0.027	0.040
b(1)	1.20	1.73	0.047	0.068
c	0.36	0.61	0.014	0.024
D	14.85	15.49	0.585	0.610
E	10.04	10.51	0.395	0.414
e	2.41	2.67	0.095	0.105
e(1)	4.88	5.28	0.192	0.208
F	1.14	1.40	0.045	0.055
H(1)	6.09	6.48	0.240	0.255
J(1)	2.41	2.92	0.095	0.115
L	13.35	14.02	0.526	0.552
L(1)	3.32	3.82	0.131	0.150
Ø P	3.54	3.94	0.139	0.155
Q	2.60	3.00	0.102	0.118
ECN: X12-0208-Rev. N, 08-Oct-12 DWG: 5471				

Notes

* M = 1.32 mm to 1.62 mm (dimension including protrusion) Heatsink hole for HVM

TO-220 FULLPAK (HIGH VOLTAGE)

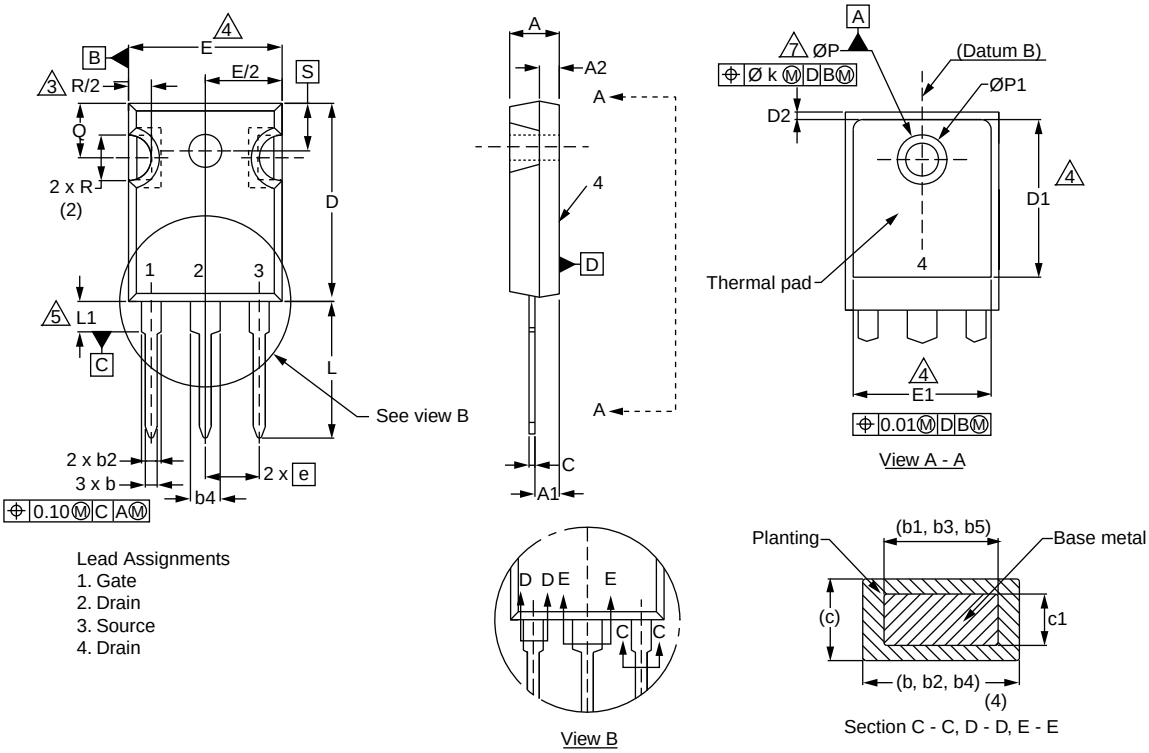


	MILLIMETERS		INCHES	
DIM.	MIN.	MAX.	MIN.	MAX.
A	4.570	4.830	0.180	0.190
A1	2.570	2.830	0.101	0.111
A2	2.510	2.850	0.099	0.112
b	0.622	0.890	0.024	0.035
b2	1.229	1.400	0.048	0.055
b3	1.229	1.400	0.048	0.055
c	0.440	0.629	0.017	0.025
D	8.650	9.800	0.341	0.386
d1	15.88	16.120	0.622	0.635
d3	12.300	12.920	0.484	0.509
E	10.360	10.630	0.408	0.419
e	2.54 BSC		0.100 BSC	
L	13.200	13.730	0.520	0.541
L1	3.100	3.500	0.122	0.138
n	6.050	6.150	0.238	0.242
Ø P	3.050	3.450	0.120	0.136
u	2.400	2.500	0.094	0.098
v	0.400	0.500	0.016	0.020
ECN: X09-0126-Rev. B, 26-Oct-09 DWG: 5972				

Notes

1. To be used only for process drawing.
2. These dimensions apply to all TO-220, FULLPAK leadframe versions 3 leads.
3. All critical dimensions should C meet $C_{pk} > 1.33$.
4. All dimensions include burrs and plating thickness.
5. No chipping or package damage.

TO-247AC (High Voltage)



Lead Assignments
1. Gate
2. Drain
3. Source
4. Drain

	MILLIMETERS		INCHES	
DIM.	MIN.	MAX.	MIN.	MAX.
A	4.58	5.31	0.180	0.209
A1	2.21	2.59	0.087	0.102
A2	1.17	2.49	0.046	0.098
b	0.99	1.40	0.039	0.055
b1	0.99	1.35	0.039	0.053
b2	1.53	2.39	0.060	0.094
b3	1.65	2.37	0.065	0.093
b4	2.42	3.43	0.095	0.135
b5	2.59	3.38	0.102	0.133
c	0.38	0.86	0.015	0.034
c1	0.38	0.76	0.015	0.030
D	19.71	20.82	0.776	0.820
D1	13.08	-	0.515	-

	MILLIMETERS		INCHES	
DIM.	MIN.	MAX.	MIN.	MAX.
D2	0.51	1.30	0.020	0.051
E	15.29	15.87	0.602	0.625
E1	13.72	-	0.540	-
e	5.46 BSC		0.215 BSC	
Ø k	0.254		0.010	
L	14.20	16.25	0.559	0.640
L1	3.71	4.29	0.146	0.169
N	7.62 BSC		0.300 BSC	
Ø P	3.51	3.66	0.138	0.144
Ø P1	-	7.39	-	0.291
Q	5.31	5.69	0.209	0.224
R	4.52	5.49	0.178	0.216
S	5.51 BSC		0.217 BSC	

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