

Snubberless 3 Quadrants Standard TRIAC

FEATURES

- ❑ Repetitive Peak Off-State Voltage : 600V/800V
- ❑ R.M.S On-State Current ($I_{T(RMS)}$) = 6A
- ❑ Gate Trigger Current : 35mA
- ❑ High commutation capability.

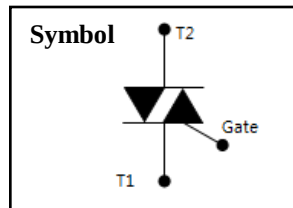
Applications

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

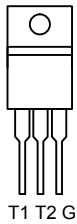
General Description

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

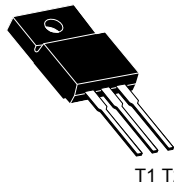
$$\begin{aligned} V_{DRM} &= 600V/800V \\ I_{T(RMS)} &= 6\text{ A} \\ I_{TSM} &= 63\text{ A} \\ I_{GT} &= 25mA \end{aligned}$$



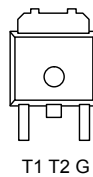
TO-220AB



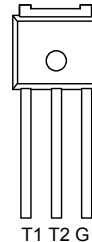
TO-220 FULLPAK



TO-252



TO-251



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings		Unit
			DTJ6A60M	DTJ6A80M	
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, $T_C = 97.6^\circ\text{C}$	5.4		A
$I_{T(RMS)}$	R.M.S. On-State Current		6		A
I_{TSM}	Surge On-State Current	½ cycle, 50Hz/60Hz, Sine wave, Non repetitive	60/63		A
I^2t	Fusing Current	$t = 10\text{ms}$	18		A ² S
P_{GM}	Forward Peak Gate Power Dissipation	$T_J = 125^\circ\text{C}$	5		W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	$T_J = 125^\circ\text{C}$, over any 20ms	0.5		W
I_{FGM}	Forward Peak Gate Current	$T_J = 125^\circ\text{C}$, pulse width $\leq 20\mu\text{s}$	2		A
V_{RGM}	Reverse Peak Gate Voltage	$T_J = 125^\circ\text{C}$, pulse width $\leq 20\mu\text{s}$	10		V
T_J	Operating Junction Temperature		-40~+150		°C
T_{STG}	Storage Temperature		-40~+150		°C

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{\text{DRM}}$	$T_J=25^\circ\text{C}$	-	-	50 μA
			$T_J=125^\circ\text{C}$	-	-	2 mA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{\text{DRM}}$	$T_J=25^\circ\text{C}$	-	-	50 μA
			$T_J=125^\circ\text{C}$	-	-	2 mA
I_{GT}	Gate Trigger Current	$V_D = 12\text{V}$, $R_L=330\Omega$	1+, 1-, 3-	-	-	35 mA
V_{GT}	Gate Trigger Voltage	$V_D = 12\text{V}$, $R_L=330\Omega$	1+, 1-, 3-	-	-	2.0 V
V_{GD}	Non-Trigger Gate Voltage ¹	$V_D = 12\text{V}$, $R_L=330\Omega$, $T_J=125^\circ\text{C}$	0.2	-	-	V
V_{TM}	Peak On-State Voltage	$I_T = 8.5\text{A}$, $I_G = 20\text{mA}$	-	1.2	1.6	V
dv/dt	Critical Rate of Rise of Off-State Voltage	$V_D = 2/3 V_{\text{DRM}}$, $T_J=125^\circ\text{C}$	200	-	-	$\text{V}/\mu\text{s}$
I_H	Holding current	$I_T = 0.2\text{A}$	-	40	-	mA

Notes :

1. Pulse Width $\leq 1.0\text{ms}$, Duty Cycle $\leq 1\%$

Thermal Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta\text{JC}}$	Thermal Resistance	Junction to Case			3.9	$^\circ\text{C}/\text{W}$
$R_{\theta\text{JA}}$	Thermal Resistance	Junction to Ambient			58	$^\circ\text{C}/\text{W}$

Typical Characteristics

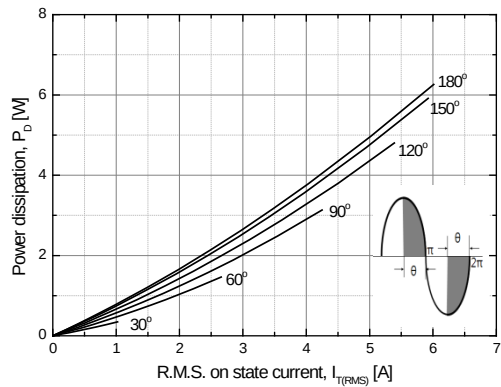


Fig 1. R.M.S. current vs. Power dissipation

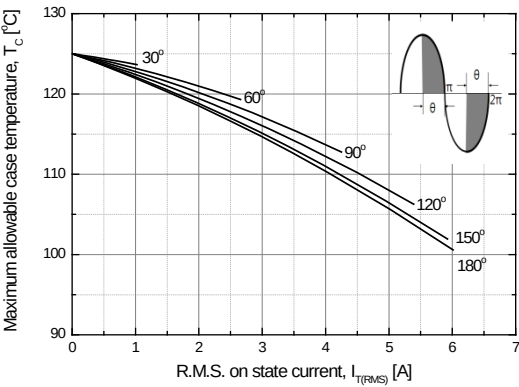


Fig 2. R.M.S. current vs. Case temperature

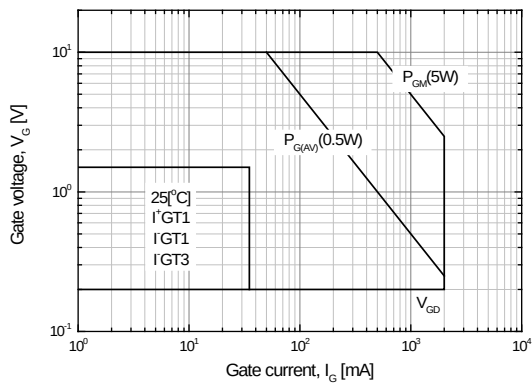


Fig 3. Gate power characteristics

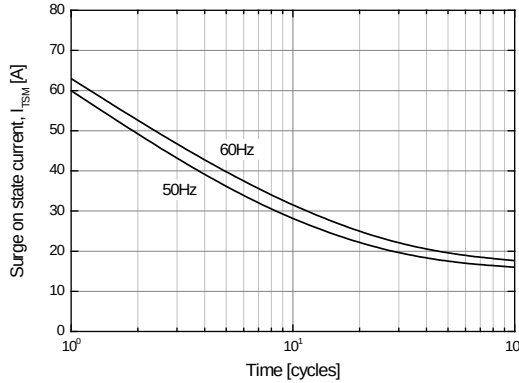


Fig 4. Surge on state current rating (Non-repetitive)

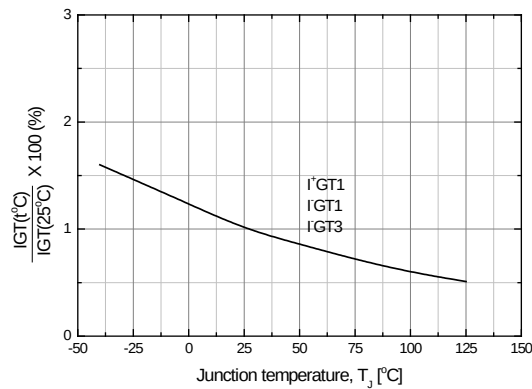


Fig 5. Gate trigger current vs. junction temperature

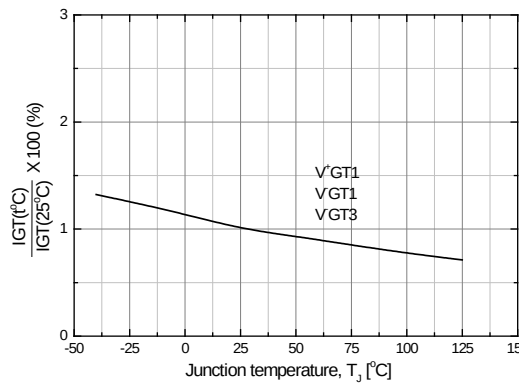
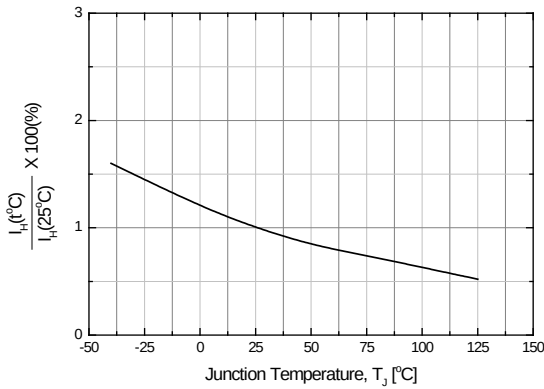


Fig 6. Gate trigger voltage vs. junction temperature

Typical Characteristics



**Fig 7. Holding current vs.
Junction temperature**

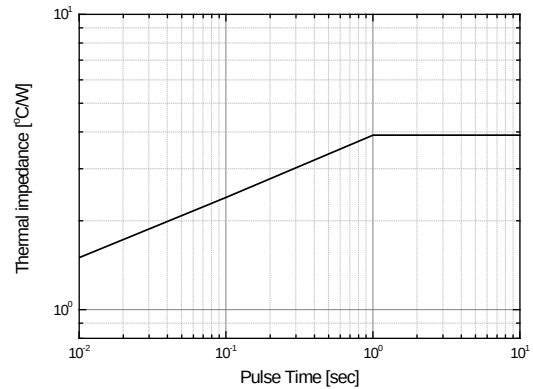
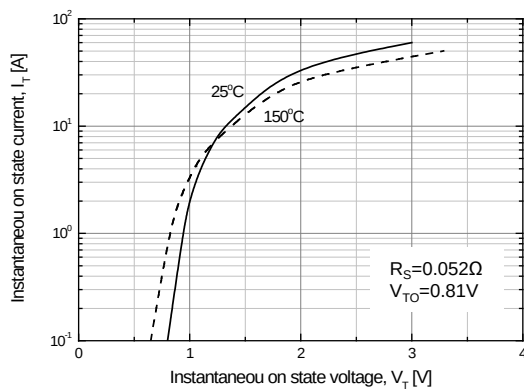
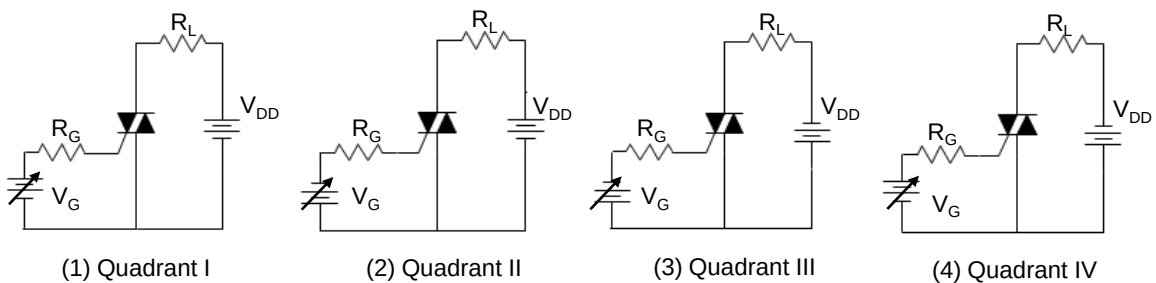


Fig 8. Thermal Impedance vs. pulse time



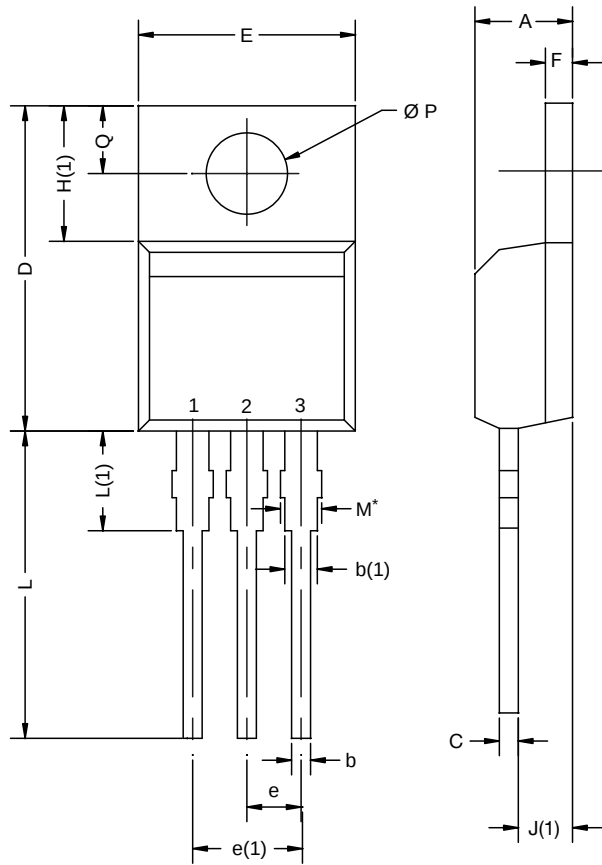
**Fig 9. Instantaneous on state current vs.
Instantaneous on state voltage**

Measurement of gate trigger current



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

TO-220AB

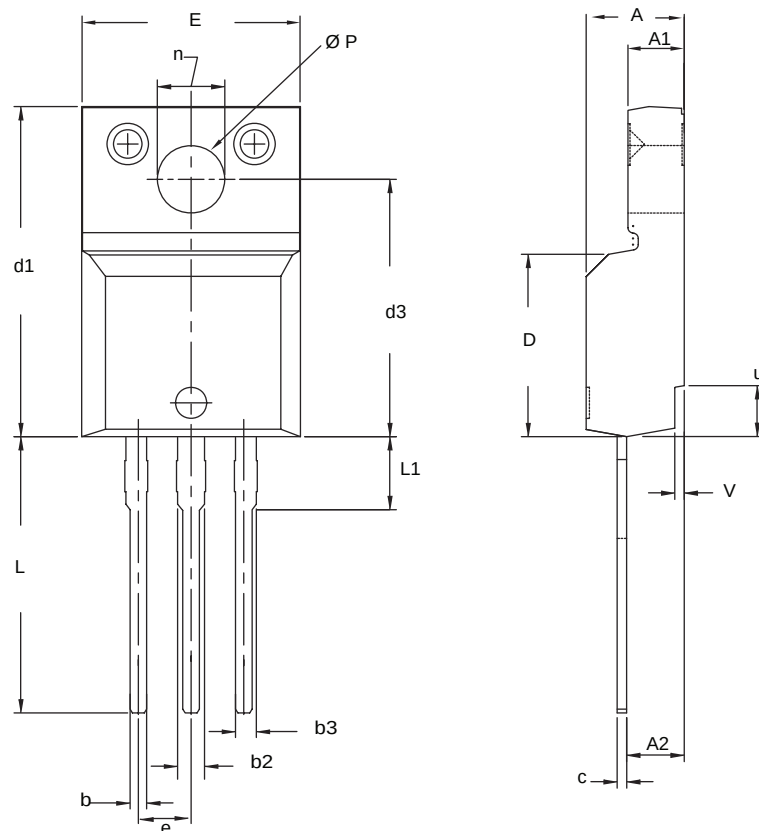


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.25	4.65	0.167	0.183
b	0.69	1.01	0.027	0.040
b(1)	1.20	1.73	0.047	0.068
c	0.36	0.61	0.014	0.024
D	14.85	15.49	0.585	0.610
E	10.04	10.51	0.395	0.414
e	2.41	2.67	0.095	0.105
e(1)	4.88	5.28	0.192	0.208
F	1.14	1.40	0.045	0.055
H(1)	6.09	6.48	0.240	0.255
J(1)	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
$\varnothing P$	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)



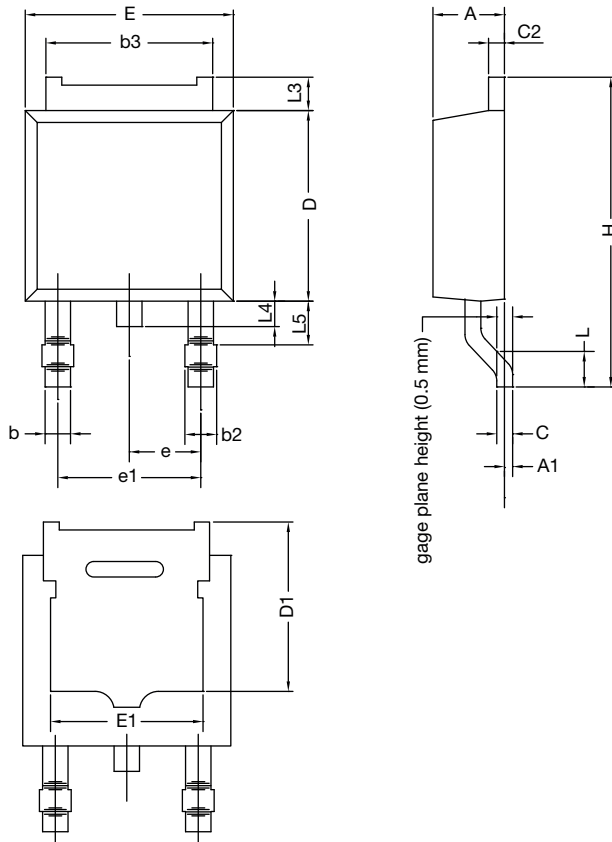
DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.570	4.830	0.180	0.190
A1	2.570	2.830	0.101	0.111
A2	2.510	2.850	0.099	0.112
b	0.622	0.890	0.024	0.035
b2	1.229	1.400	0.048	0.055
b3	1.229	1.400	0.048	0.055
c	0.440	0.629	0.017	0.025
D	8.650	9.800	0.341	0.386
d1	15.88	16.120	0.622	0.635
d3	12.300	12.920	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-252AA CASE OUTLINE

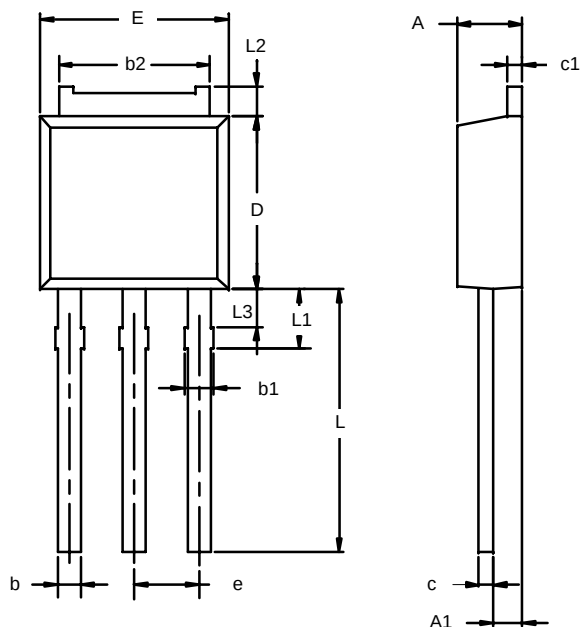


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	10.41	0.370	0.410
e	2.28 BSC		0.090 BSC	
e1	4.56 BSC		0.180 BSC	
L	1.40	1.78	0.055	0.070
L3	0.89	1.27	0.035	0.050
L4	-	1.02	-	0.040
L5	1.14	1.52	0.045	0.060
ECN: X12-0247-Rev. M, 24-Dec-12				
DWG: 5347				

Note

- Dimension L3 is for reference only.

TO-251AA (DPAK)



Note: Dimension L3 is for reference only.

Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	2.21	2.38	0.087	0.094
A1	0.89	1.14	0.035	0.045
b	0.71	0.89	0.028	0.035
b1	0.76	1.14	0.030	0.045
b2	5.23	5.43	0.206	0.214
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
E	6.48	6.73	0.255	0.265
e	2.28 BSC		0.090 BSC	
L	8.89	9.53	0.350	0.375
L1	1.91	2.28	0.075	0.090
L2	0.89	1.27	0.035	0.050
L3	1.15	1.52	0.045	0.060
ECN: S-03946—Rev. E, 09-Jul-01 DWG: 5346				

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