

## 3 Quadrants Standard TRIAC

### FEATURES

- ❑ Repetitive Peak Off-State Voltage : 600V/800V
- ❑ R.M.S On-State Current ( $I_{T(RMS)} = 2A$ )
- ❑ Gate Trigger Current : 10mA
- ❑ High commutation capability.

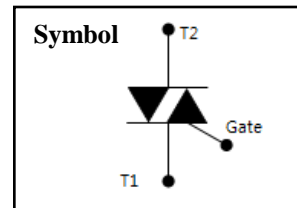
### Applications

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

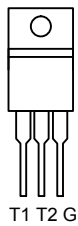
### General Description

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

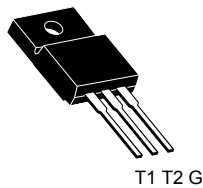
$V_{DRM} = 600V/800V$
$I_{T(RMS)} = 2 A$
$I_{TSM} = 17 A$
$I_{GT} = 10mA$



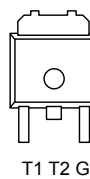
TO-220AB



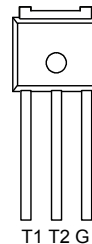
TO-220 FULLPAK



TO-252



TO-251



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

Symbol	Parameter	Conditions	Ratings		Unit
			DTJ2A60	DTJ2A80	
$V_{DRM}$	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, $T_C = 97.6^\circ C$	1.6		A
$I_{T(RMS)}$	R.M.S. On-State Current		2		A
$I_{TSM}$	Surge On-State Current	½ cycle, 50Hz/60Hz, Sine wave, Non repetitive	16/17		A
$I^2t$	Fusing Current	$t = 10ms$	1.28		A <sup>2</sup> S
$P_{GM}$	Forward Peak Gate Power Dissipation	$T_J = 125^\circ C$	1		W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	$T_J = 125^\circ C$ , over any 20ms	0.2		W
$I_{FGM}$	Forward Peak Gate Current	$T_J = 125^\circ C$ , pulse width $\leq 20\mu s$	1		A
$V_{RGM}$	Reverse Peak Gate Voltage	$T_J = 125^\circ C$ , pulse width $\leq 20\mu s$	5		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 )

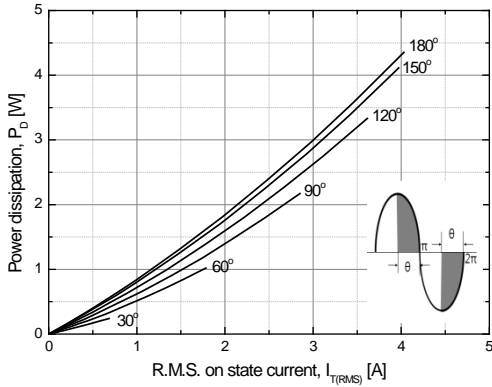
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$I_{\text{DRM}}$	Repetitive Peak Off-State Current	$V_D = V_{\text{DRM}}$	$T_J=25^\circ\text{C}$	-	-	10	$\mu\text{A}$
			$T_J=125^\circ\text{C}$	-	-	0.1	$\text{mA}$
$I_{\text{RRM}}$	Repetitive Peak Reverse Current	$V_D = V_{\text{DRM}}$	$T_J=25^\circ\text{C}$	-	-	50	$\mu\text{A}$
			$T_J=125^\circ\text{C}$	-	-	5	$\text{mA}$
$I_{\text{GT}}$	Gate Trigger Current	$V_D = 12\text{V}, R_L=330\Omega$	1+, 1-, 3-	-	-	10	$\text{mA}$
$V_{\text{GT}}$	Gate Trigger Voltage	$V_D = 12\text{V}, R_L=330\Omega$	1+, 1-, 3-	-	-	2.0	V
$V_{\text{GD}}$	Non-Trigger Gate Voltage <sup>1</sup>	$V_D = 12\text{V}, R_L=330\Omega, T_J=125^\circ\text{C}$		0.2	-	-	V
$V_{\text{TM}}$	Peak On-State Voltage	$I_T = 7\text{A}, I_G = 20\text{mA}$		-	1.2	1.5	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	-	-	V/us
$I_{\text{H}}$	Holding current	$I_T = 0.2\text{A}$		-	25	-	$\text{mA}$

**Notes :**

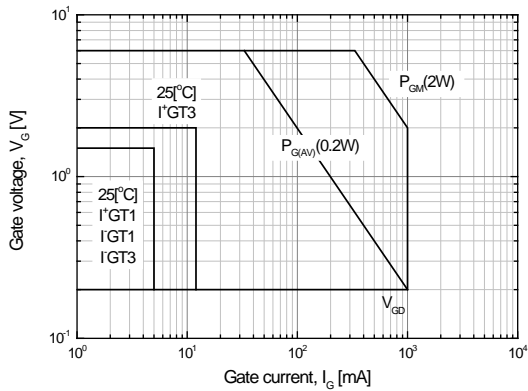
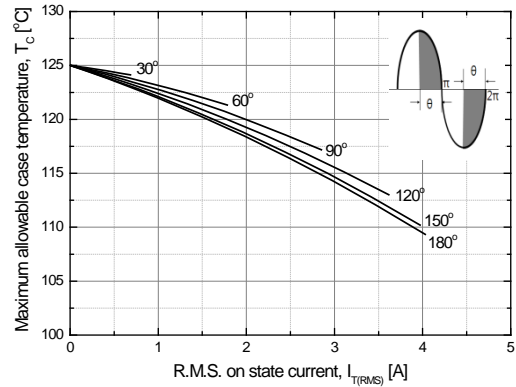
 1. Pulse Width  $\leq 1.0\text{ms}$ , Duty Cycle  $\leq 1\%$ 
**Thermal Characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\theta\text{JC}}$	Thermal Resistance	Junction to Case			3.6	$^\circ\text{C/W}$
$R_{\theta\text{JA}}$	Thermal Resistance	Junction to Ambient			80	$^\circ\text{C/W}$

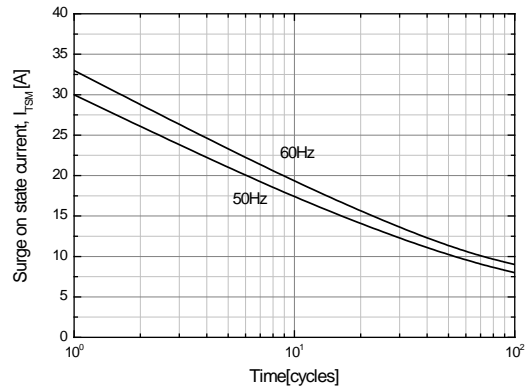
**Typical Characteristics**



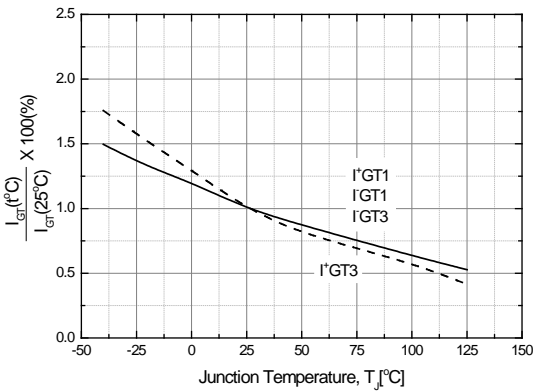
**Fig 1. R.M.S. current vs. Power dissipation**



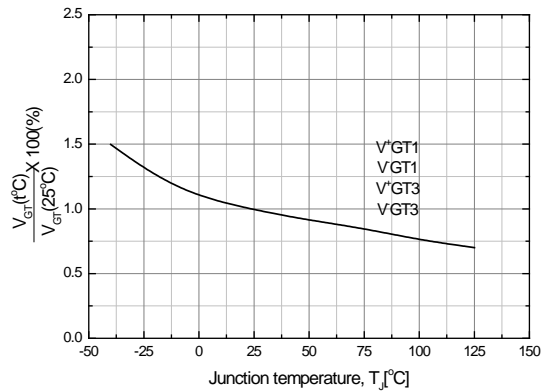
**Fig 3. Gate power characteristics**



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

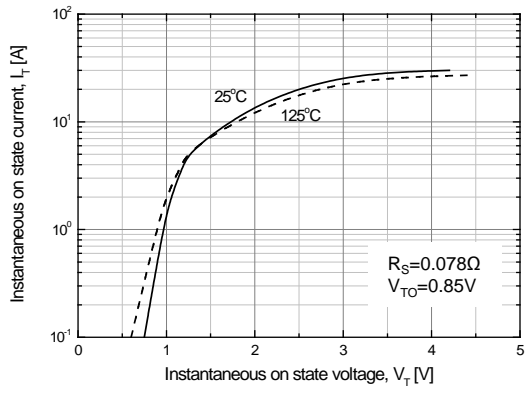


**Fig 5. Gate trigger current vs. junction temperature**

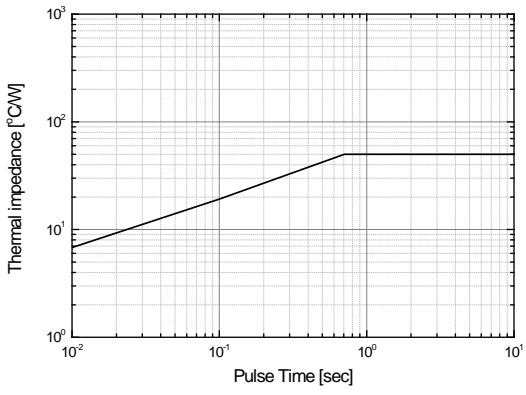


**Fig 6. Gate trigger voltage vs. junction temperature**

**Typical Characteristics**

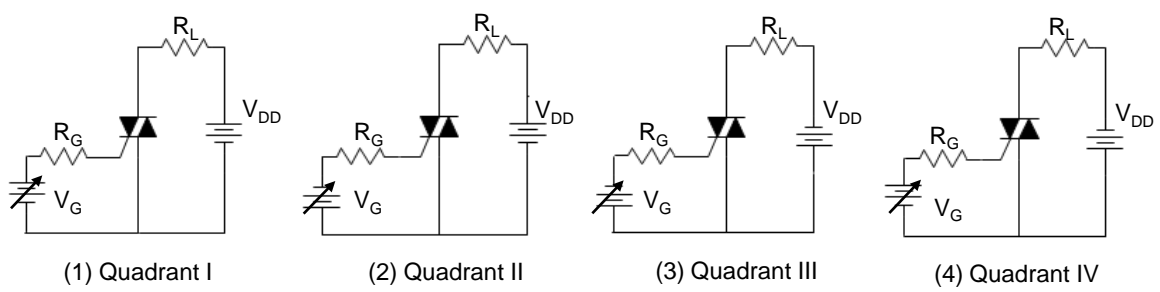


**Fig 7. Instantaneous on state current vs. Instantaneous on state voltage**



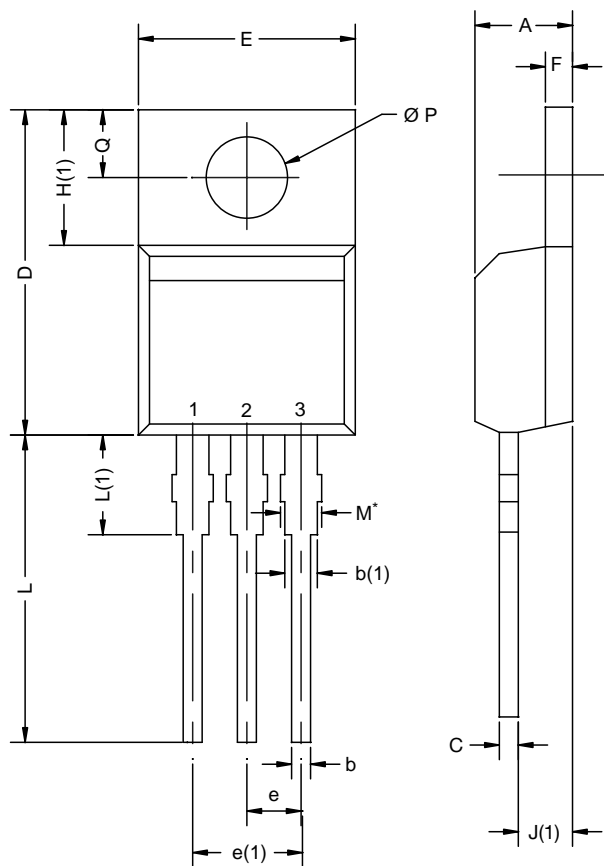
**Fig 8. Thermal Impedance vs. pulse time**

**Measurement of gate trigger current**



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

**TO-220AB**



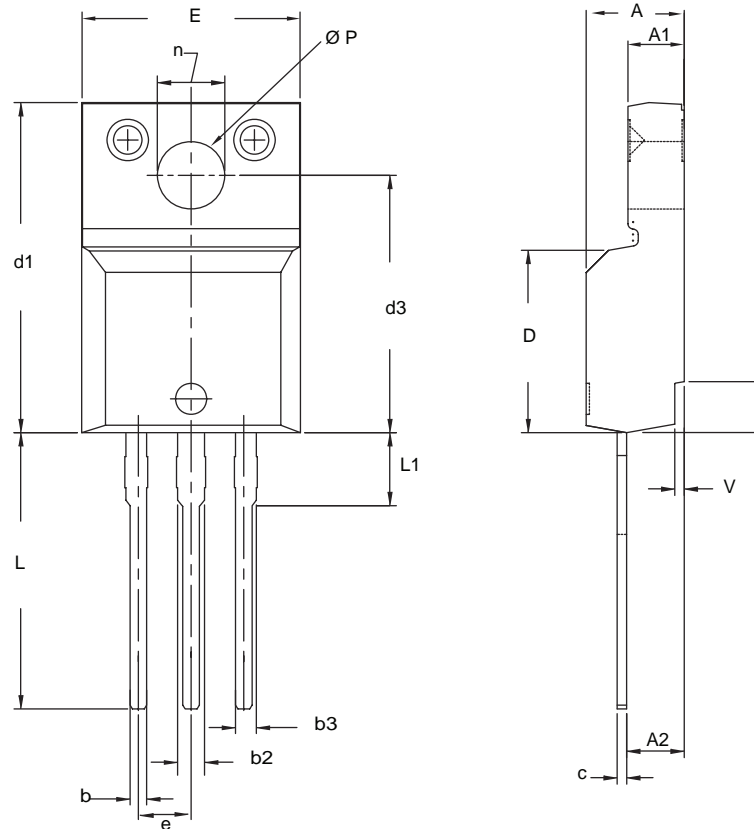
DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.25	4.65	0.167	0.183
b	0.69	1.01	0.027	0.040
b(1)	1.20	1.73	0.047	0.068
c	0.36	0.61	0.014	0.024
D	14.85	15.49	0.585	0.610
E	10.04	10.51	0.395	0.414
e	2.41	2.67	0.095	0.105
e(1)	4.88	5.28	0.192	0.208
F	1.14	1.40	0.045	0.055
H(1)	6.09	6.48	0.240	0.255
J(1)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



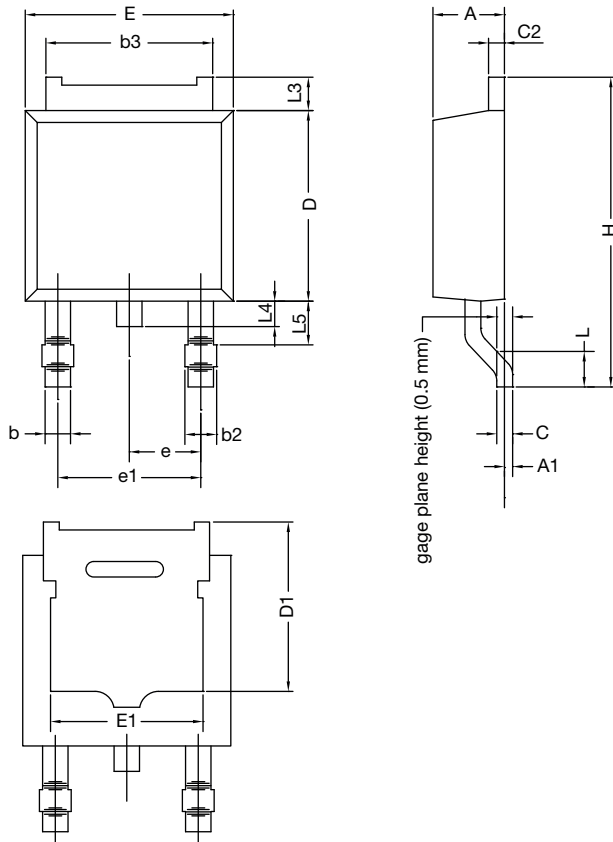
DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.570	4.830	0.180	0.190
A1	2.570	2.830	0.101	0.111
A2	2.510	2.850	0.099	0.112
b	0.622	0.890	0.024	0.035
b2	1.229	1.400	0.048	0.055
b3	1.229	1.400	0.048	0.055
c	0.440	0.629	0.017	0.025
D	8.650	9.800	0.341	0.386
d1	15.88	16.120	0.622	0.635
d3	12.300	12.920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

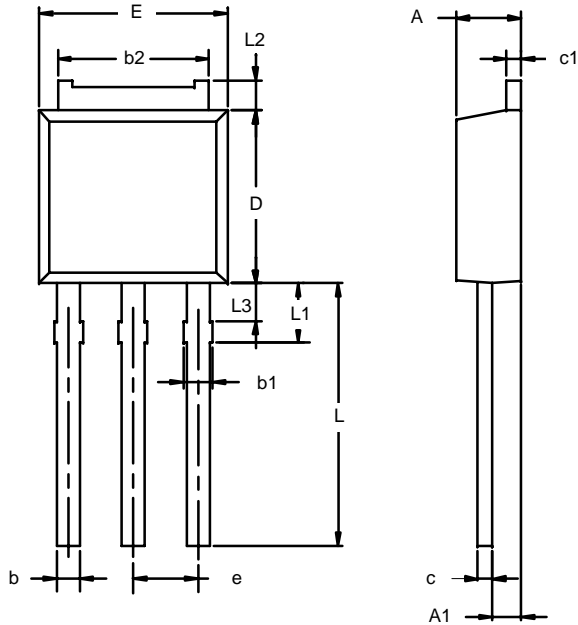


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	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
<b>A</b>	2.21	2.38	0.087	0.094
<b>A1</b>	0.89	1.14	0.035	0.045
<b>b</b>	0.71	0.89	0.028	0.035
<b>b1</b>	0.76	1.14	0.030	0.045
<b>b2</b>	5.23	5.43	0.206	0.214
<b>c</b>	0.46	0.58	0.018	0.023
<b>c1</b>	0.46	0.58	0.018	0.023
<b>D</b>	5.97	6.22	0.235	0.245
<b>E</b>	6.48	6.73	0.255	0.265
<b>e</b>	2.28 BSC		0.090 BSC	
<b>L</b>	8.89	9.53	0.350	0.375
<b>L1</b>	1.91	2.28	0.075	0.090
<b>L2</b>	0.89	1.27	0.035	0.050
<b>L3</b>	1.15	1.52	0.045	0.060
ECN: S-03946—Rev. E, 09-Jul-01 DWG: 5346				



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