Absolute Maximum Ratings — Sensitive Triac (4 Quadrants)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	Lxx08Ly Lxx08Ry / Lxx08Vy / Lxx08Dy	T_C = 80°C T_C = 85°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_J initial = 25°C)	f = 50 Hz f = 60 Hz	t = 20 ms t = 16.7 ms	65 85	A
I^2t	I^2t Value for fusing	t_p = 8.3 ms		26.5	A^2s
di/dt	Critical rate of rise of on-state current I_G = 50mA with 0.1µs rise time	f = 120 Hz	T_J = 110°C	70	A/µs
I_{GTM}	Peak gate trigger current	t_p=20µs	T_J = 110°C	4	A
$P_{G(AV)}$	Average gate power dissipation		T_J = 110°C	0.4	W
T_{stg}	Storage temperature range			-40 to 150	°C
T_J	Operating junction temperature range			-40 to 110	°C

Note: xx = voltage/10, y = sensitivity

Absolute Maximum Ratings — Standard Triac

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	Qxx08Ry / Qxx08Ny Qxx08Ly	T_C = 95°C T_C = 90°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_J initial = 25°C)	f = 50 Hz f = 60 Hz	t = 20 ms t = 16.7 ms	83 100	A
I^2t	I^2t Value for fusing	t_p = 8.3 ms		41	A^2s
di/dt	Critical rate of rise of on-state current I_G = 200mA with ≤ 0.1µs rise time	f = 120 Hz	T_J = 125°C	70	A/µs
I_{GTM}	Peak gate trigger current	t_p=20µs	T_J = 125°C	4	A
$P_{G(AV)}$	Average gate power dissipation	-	T_J = 125°C	0.5	W
T_{stg}	Storage temperature range	-	-	-40 to 150	°C
T_J	Operating junction temperature range	-	-	-40 to 125	°C

Note: xx = voltage/10, y = sensitivity

Revised: BO.12/09/20

Absolute Maximum Ratings — Alternistor (3 Quadrants)

Symbol	Parameter				Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	Qxx08LHy Qxx08RHy / Qxx08NHy Qxx08VHy / Qxx08DHy		T_C = 90°C T_C = 95°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_J initial = 25°C)	f = 50 Hz	t = 20 ms	Qxx08VHy / Qxx08DHy Qxx08LHy / Qxx08RHy / Qxx08NHy Qxx08VHy / Qxx08DHy Qxx08LHy / Qxx08RHy / Qxx08NHy	80 83 85 100	A
I^2t	I^2t Value for fusing	t_p = 8.3 ms		Qxx08VHy / Qxx08DHy Qxx08LHy / Qxx08RHy / Qxx08NHy	30 41	A^2s
di/dt	Critical rate of rise of on-state current	f = 120 Hz		T_J = 125°C	70	A/µs
I_{GTM}	Peak gate trigger current	t_p=20µs	T_J = 125°C	Qxx08VHy / Qxx08DHy Qxx08LHy / Qxx08RHy / Qxx08NHy	4 4	A
$P_{G(AV)}$	Average gate power dissipation	T_J = 125°C	I_{GT} = 10mA I_{GT} = 35mA	Qxx08VHy / Qxx08DHy Qxx08LHy / Qxx08RHy / Qxx08NHy	0.4 0.5	W
T_{stg}	Storage temperature range			-	-40 to 150	°C
T_J	Operating junction temperature range			-	-40 to 125	°C

Note: xx = voltage/10, y = sensitivity

Electrical Characteristics (T_J = 25°C, unless otherwise specified) — Sensitive Triac (4 Quadrants)

Symbol	Test Conditions	Quadrant		Lxx08x6	Lxx08x8	Unit
I_{GT}	V_D = 12V R_L = 60 Ω	I – II – III IV	MAX.	5 10	10 20	mA
V_{GT}	V_D = 12V R_L = 60 Ω	ALL	MAX.	1.3		V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ T_J = 110°C	ALL	MIN.	0.2		V
I_H	I_T = 100mA		MAX.	10	20	mA
dv/dt	V_D = V_{DRM} Gate Open T_J = 100°C	400V 600V	TYP.	30 20	40 30	V/µs
(dv/dt)c	(di/dt)c = 4.3 A/ms T_J = 110°C		TYP.	2	2	V/µs
t_{gt}	I_G = 100mA PW = 15µs I_T = 11.3 A(pk)		TYP.	3.0	3.2	µs

Note: xx = voltage/10, x = package, y = sensitivity

Electrical Characteristics (T_J = 25°C, unless otherwise specified) — Standard Triac

Symbol	Test Conditions	Quadrant		Qxx08x4	Qxx08x5	Unit
I_{GT}	V_D = 12V R_L = 60 Ω	I – II – III IV	MAX. TYP.	25 50	50 75	mA
V_{GT}	V_D = 12V R_L = 60 Ω	I – II – III	MAX.	1.3		V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ T_J = 125°C	ALL	MIN.	0.2		V
I_H	I_T = 200mA		MAX.	50	50	mA
dv/dt	V_D = V_{DRM} Gate Open T_J = 125°C	400V 600V 800V 1000V	MIN.	150 - - -	- 125 100 80	V/µs
(dv/dt)c	(di/dt)c = 4.3 A/ms T_J = 125°C		TYP.	4	4	V/µs
t_{gt}	I_G = 100mA PW = 15µs I_T = 11.3 A(pk)		TYP.	3.0	3.0	µs

Electrical Characteristics (T_J = 25°C, unless otherwise specified) — Alternistor Triac (3 Quadrants)

Symbol	Test Conditions	Quadrant			Qxx08xH3	Qxx08xH4	Unit
I_{GT}	V_D = 12V R_L = 60 Ω	I – II – III	MAX.	-	10	35	mA
V_{GT}	V_D = 12V R_L = 60 Ω	I – II – III	MAX.		1.3		V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ T_J = 125°C	I – II – III	MIN.	-	0.2		V
I_H	I_T = 100mA		MAX.	-	15	35	mA
dv/dt	V_D = V_{DRM} Gate Open T_J = 125°C	Qxx08LHy / Qxx08RHy / Qxx08NHy	MIN.	400V 600V 800V 1000V	75 50	400 300 200 100	V/µs
		Qxx08VHy / Qxx08DHy		400V 600V 800V 1000V	75 50	450 350 250 150	
(dv/dt)c	(di/dt)c = 4.3 A/ms T_J = 125°C		MIN.	-	20	25	V/µs
t_{gt}	I_G = 100mA PW = 15µs I_T = 11.3 A(pk)		TYP.	-	4.0	4.0	µs

Note: xx = voltage/10, x = package, y = sensitivity

Static Characteristics

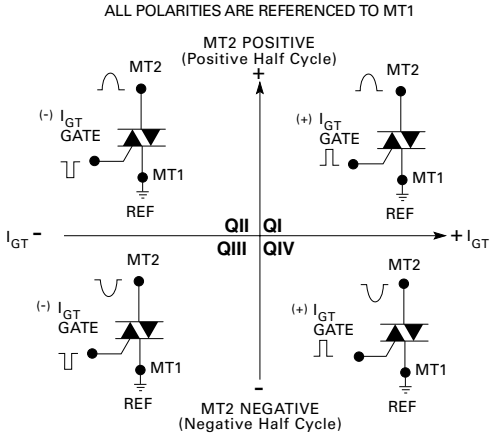
Symbol	Test Conditions					Value	Unit
V_{TM}	I_{TM} = 11.3A t_p = 380 µs				MAX.	1.60	V
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	Lxx08xy	T_J = 25°C	400 - 600V	MAX.	10	µA
			T_J = 110°C	400 - 600V		0.5	mA
		Qxx08xy	T_J = 25°C	400 - 1000V		20	µA
			T_J = 125°C	400 - 800V		2	mA
			T_J = 100°C	1000V		3	
		Qxx08xHy	T_J = 25°C	400 - 800V		10	µA
				1000V		20	
			T_J = 125°C	400 - 800V		2	mA
			T_J = 100°C	1000V		3	

Thermal Resistances

Symbol	Parameter		Value	Unit
$R_{\theta(J-C)}$	Junction to case (AC)	L/Qxx08Ryy / L/Qxx08Nyy	1.5	°C/W
		L/Qxx08Lyy	2.8	
		L/Qxx08Vyy	2.1	
$R_{\theta(J-A)}$	Junction to ambient	L/Qxx08Ryy	45	°C/W
		L/Qxx08Lyy	50	
		L/Qxx08Vyy	64	

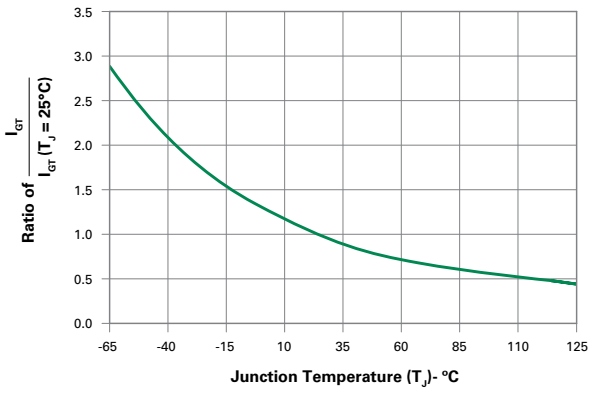
Note: xx = voltage/10, x = package, y = sensitivity, yy = type & sensitivity

Figure 1: Definition of Quadrants



Note: Alternistors will not operate in QIV

Figure 2: Normalized DC Gate Trigger Current for All Quadrants vs. Junction Temperature



Revised: BO.12/09/20

Figure 3: Normalized DC Holding Current vs. Junction Temperature

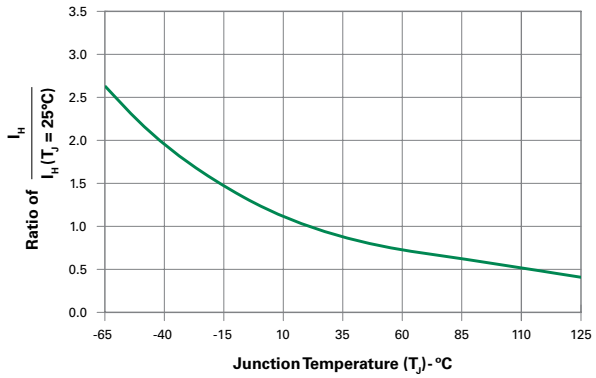


Figure 4: Normalized DC Gate Trigger Voltage for All Quadrants vs. Junction Temperature

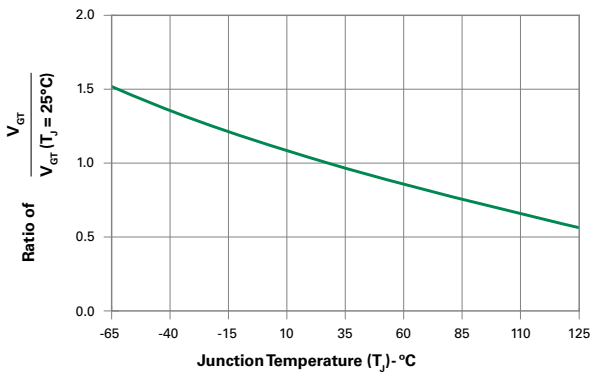


Figure 5: Power Dissipation (Typical) vs. RMS On-State Current

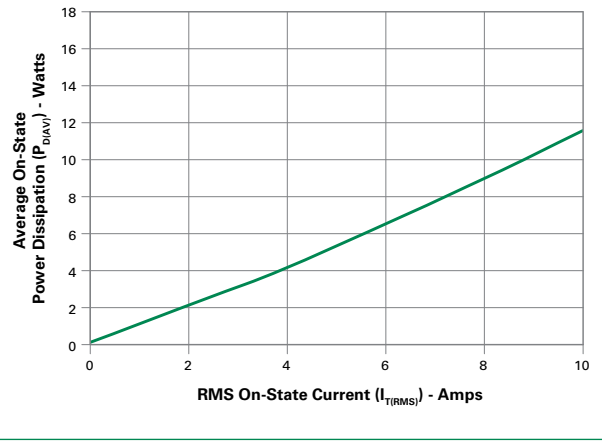


Figure 6: Maximum Allowable Case Temperature vs. On-State Current (Sensitive Triac)

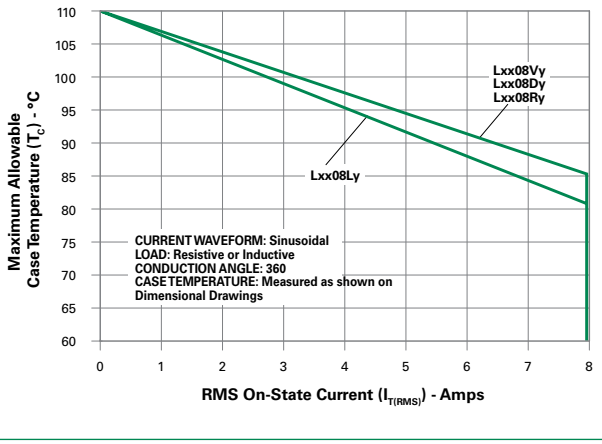


Figure 7: Maximum Allowable Case Temperature vs. On-State Current (Standard / Alternistor Triac)

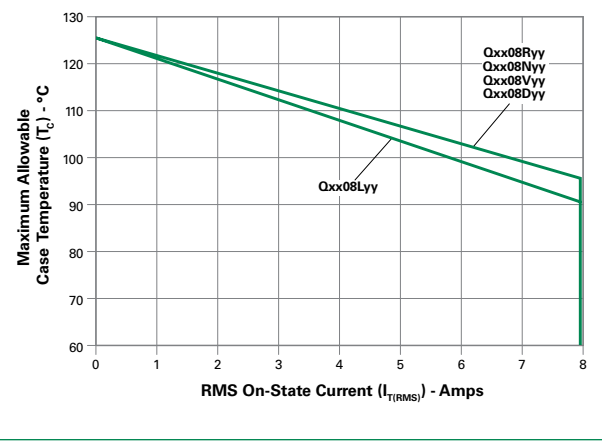
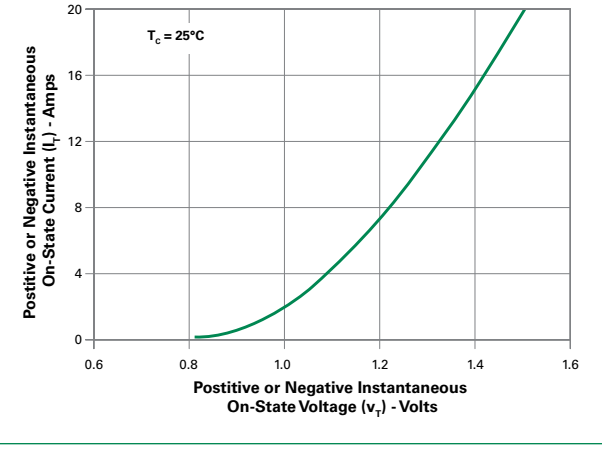


Figure 8: On-State Current vs. On-State Voltage (Typical)



Note: xx = voltage/10, x = package, yy = type & sensitivity

Revised: BO.12/09/20

Figure 9: Maximum Allowable Ambient Temperature vs. On-State Current

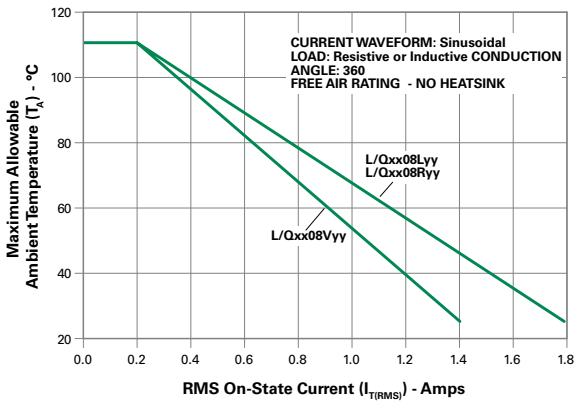
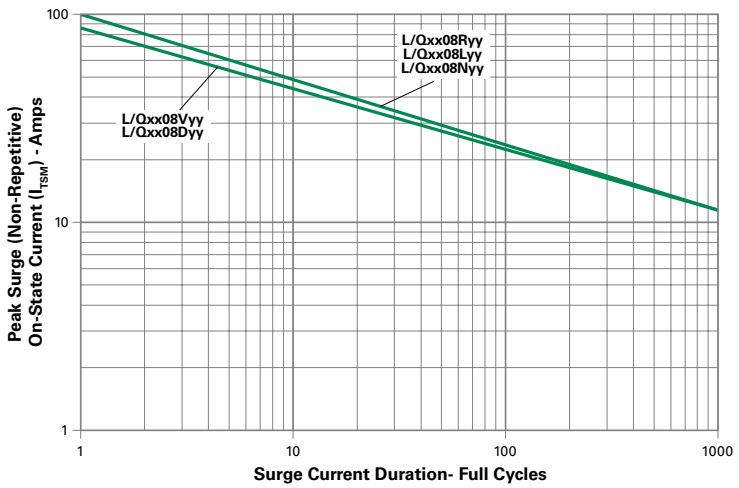


Figure 10: Surge Peak On-State Current vs. Number of Cycles



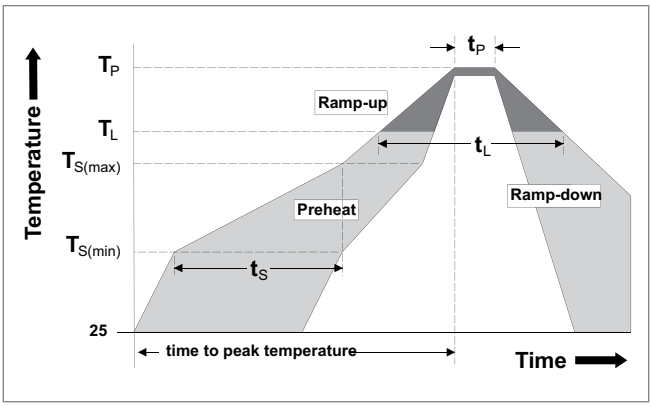
SUPPLY FREQUENCY: 60 Hz Sinusoidal
LOAD: Resistive
RMS On-State Current: [$I_{T(RMS)}$]: Maximum Rated Value at Specified Case Temperature

Notes:
1. Gate control may be lost during and immediately following surge current interval.
2. Overload may not be repeated until junction temperature has returned to steady-state rated value.

Note: xx = voltage/10, x = package, y = sensitivity, yy = type & sensitivity

Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



Physical Specifications

Terminal Finish	100% Matte Tin-plated
Body Material	UL Recognized compound meeting flammability rating V-0
Terminal Material	Copper Alloy

Design Considerations

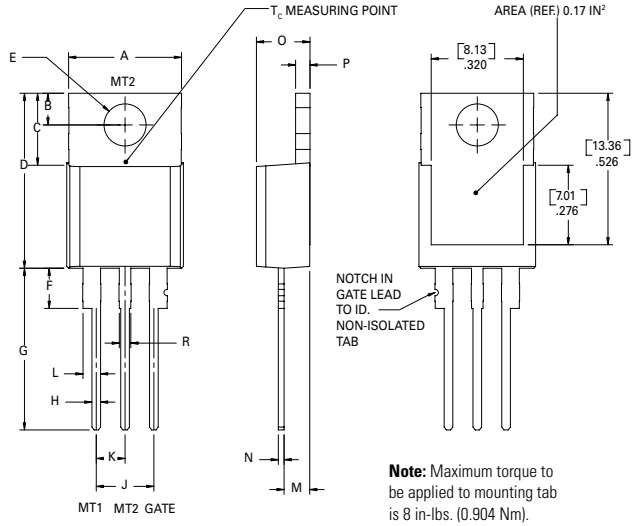
Careful selection of the correct component for the application's operating parameters and environment will go a long way toward extending the operating life of the Thyristor. Good design practice should limit the maximum continuous current through the main terminals to 75% of the component rating. Other ways to ensure long life for a power discrete semiconductor are proper heat sinking and selection of voltage ratings for worst case conditions. Overheating, overvoltage (including dv/dt), and surge currents are the main killers of semiconductors. Correct mounting, soldering, and forming of the leads also help protect against component damage.

Environmental Specifications

Test	Specifications and Conditions
AC Blocking (V_{DRM})	MIL-STD-750, M-1040, Cond A Applied Peak AC voltage @ 125°C for 1008 hours
Temperature Cycling	MIL-STD-750, M-1051, 100 cycles; -40°C to +150°C; 15-min dwell-time
Temperature/Humidity	EIA / JEDEC, JESD22-A101 1008 hours; 320V - DC: 85°C; 85% rel humidity
High Temp Storage	MIL-STD-750, M-1031, 1008 hours; 150°C
Low-Temp Storage	1008 hours; -40°C
Resistance to Solder Heat	MIL-STD-750 Method 2031
Solderability	ANSI/J-STD-002, category 3, Test A
Lead Bend	MIL-STD-750, M-2036 Cond E

Revised: BO.12/09/20

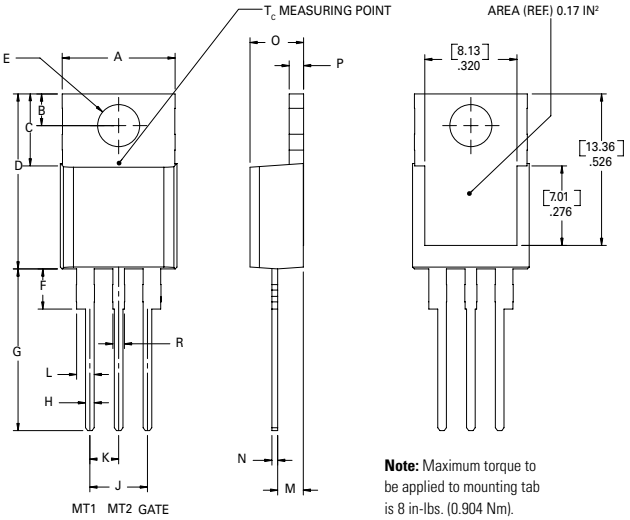
Dimensions — TO-220AB (R-Package) — Non-Isolated Mounting Tab Common with Center Lead



Note: Maximum torque to be applied to mounting tab is 8 in-lbs. (0.904 Nm).

Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.380	0.420	9.65	10.67
B	0.105	0.115	2.67	2.92
C	0.230	0.250	5.84	6.35
D	0.590	0.620	14.99	15.75
E	0.142	0.147	3.61	3.73
F	0.110	0.130	2.79	3.30
G	0.540	0.575	13.72	14.61
H	0.025	0.035	0.64	0.89
J	0.195	0.205	4.95	5.21
K	0.095	0.105	2.41	2.67
L	0.060	0.075	1.52	1.91
M	0.085	0.095	2.16	2.41
N	0.018	0.024	0.46	0.61
O	0.178	0.188	4.52	4.78
P	0.045	0.060	1.14	1.52
R	0.038	0.048	0.97	1.22

Dimensions — TO-220AB (L-Package) — Isolated Mounting Tab

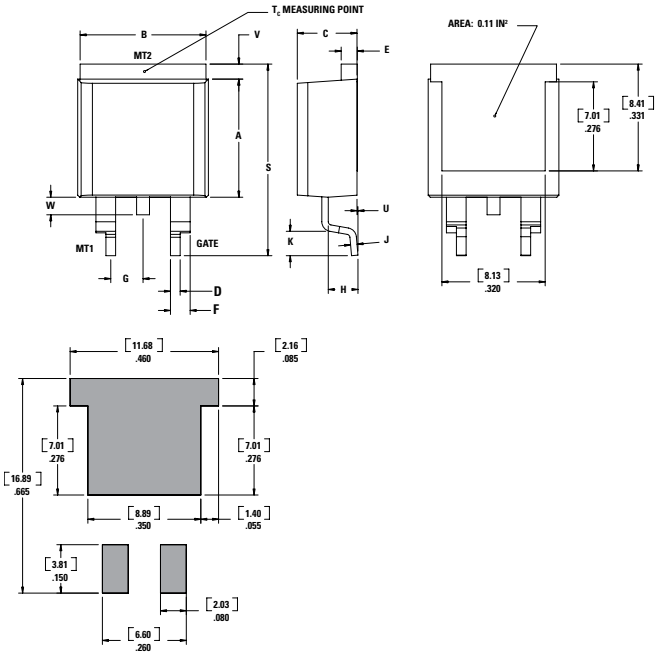


Note: Maximum torque to be applied to mounting tab is 8 in-lbs. (0.904 Nm).

Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.380	0.420	9.65	10.67
B	0.105	0.115	2.67	2.92
C	0.230	0.250	5.84	6.35
D	0.590	0.620	14.99	15.75
E	0.142	0.147	3.61	3.73
F	0.110	0.130	2.79	3.30
G	0.540	0.575	13.72	14.61
H	0.025	0.035	0.64	0.89
J	0.195	0.205	4.95	5.21
K	0.095	0.105	2.41	2.67
L	0.060	0.075	1.52	1.91
M	0.085	0.095	2.16	2.41
N	0.018	0.024	0.46	0.61
O	0.178	0.188	4.52	4.78
P	0.045	0.060	1.14	1.52
R	0.038	0.048	0.97	1.22

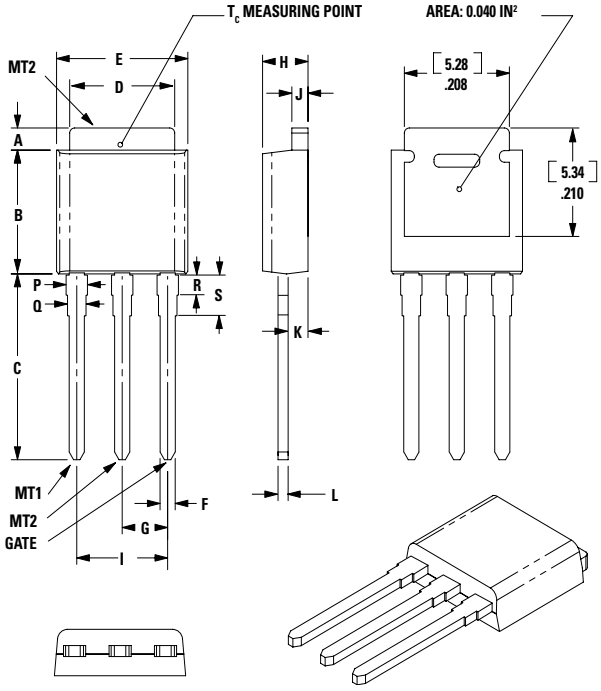
Revised: BO.12/09/20

Dimensions — TO-263AB (N-Package) — D²-PAK Surface Mount



Dimension	Inches		Millimeters	
	Min	Max	Min	Max
A	0.360	0.370	9.14	9.40
B	0.380	0.420	9.65	10.67
C	0.178	0.188	4.52	4.78
D	0.025	0.035	0.64	0.89
E	0.045	0.060	1.14	1.52
F	0.060	0.075	1.52	1.91
G	0.095	0.105	2.41	2.67
H	0.092	0.102	2.34	2.59
J	0.018	0.024	0.46	0.61
K	0.090	0.110	2.29	2.79
S	0.590	0.625	14.99	15.88
V	0.035	0.045	0.89	1.14
U	0.002	0.010	0.05	0.25
W	0.040	0.070	1.02	1.78

Dimensions — TO-251AA (V-Package) — V-PAK Through Hole



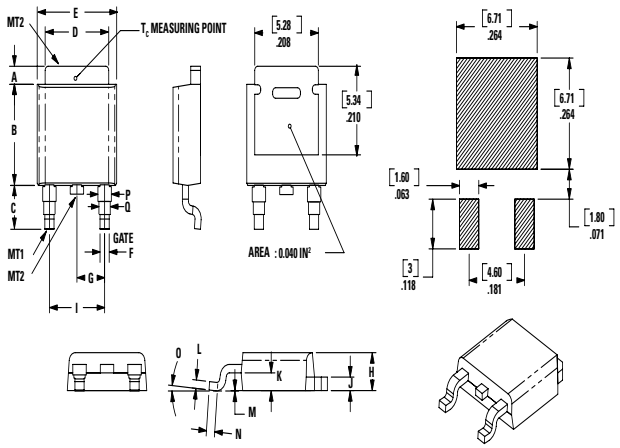
Dimension	Inches			Millimeters		
	Min	Typ	Max	Min	Typ	Max
A	0.037	0.040	0.043	0.94	1.01	1.09
B	0.235	0.242	0.245	5.97	6.15	6.22
C	0.350	0.361	0.375	8.89	9.18	9.53
D	0.205	0.208	0.213	5.21	5.29	5.41
E	0.255	0.262	0.265	6.48	6.66	6.73
F	0.027	0.031	0.033	0.69	0.80	0.84
G	0.087	0.090	0.093	2.21	2.28	2.36
H	0.085	0.092	0.095	2.16	2.34	2.41
I	0.176	0.180	0.184	4.47	4.57	4.67
J	0.018	0.020	0.023	0.46	0.51	0.58
K	0.035	0.037	0.039	0.90	0.95	1.00
L	0.018	0.020	0.023	0.46	0.52	0.58
P	0.042	0.047	0.052	1.06	1.20	1.32
Q	0.034	0.039	0.044	0.86	1.00	1.11
R	0.034	0.039	0.044	0.86	1.00	1.11
S	0.074	0.079	0.084	1.86	2.00	2.11

Revised: BO.12/09/20

Thyristors

8 Amp Sensitive, Standard & Alternistor (High Commutation) Triacs

Dimensions — TO-252AA (D-Package) — D-PAK Surface Mount



Dimension	Inches			Millimeters		
	Min	Typ	Max	Min	Typ	Max
A	0.037	0.040	0.043	0.94	1.01	1.09
B	0.235	0.243	0.245	5.97	6.16	6.22
C	0.106	0.108	0.113	2.69	2.74	2.87
D	0.205	0.208	0.213	5.21	5.29	5.41
E	0.255	0.262	0.265	6.48	6.65	6.73
F	0.027	0.031	0.033	0.69	0.80	0.84
G	0.087	0.090	0.093	2.21	2.28	2.36
H	0.085	0.092	0.095	2.16	2.33	2.41
I	0.176	0.179	0.184	4.47	4.55	4.67
J	0.018	0.020	0.023	0.46	0.51	0.58
K	0.035	0.037	0.039	0.90	0.95	1.00
L	0.018	0.020	0.023	0.46	0.51	0.58
M	0.000	0.000	0.004	0.00	0.00	0.10
N	0.021	0.026	0.027	0.53	0.67	0.69
O	0°	0°	5°	0°	0°	5°
P	0.042	0.047	0.052	1.06	1.20	1.32
Q	0.034	0.039	0.044	0.86	1.00	1.11

Product Selector

Part Number	Voltage (xx)				Gate Sensitivity Quadrants		Type	Package
	400V	600V	800V	1000V	I – II – III	IV		
Lxx08L6	X	X	-	-	5 mA	10 mA	Sensitive Triac	TO-220L
Lxx08D6	X	X	-	-	5 mA	10 mA	Sensitive Triac	TO-252 D-PAK
Lxx08R6	X	X	-	-	5mA	10mA	Sensitive Triac	TO-220R
Lxx08V6	X	X	-	-	5 mA	10 mA	Sensitive Triac	TO-251 V-PAK
Lxx08L8	X	X	-	-	10 mA	20 mA	Sensitive Triac	TO-220L
Lxx08D8	X	X	-	-	10 mA	20 mA	Sensitive Triac	TO-252 D-PAK
Lxx08R8	X	X	-	-	10mA	20mA	Sensitive Triac	TO-220R
Lxx08V8	X	X	-	-	10 mA	20 mA	Sensitive Triac	TO-251 V-PAK
Qxx08NH3	X	X	-	-	10mA	-	Alternistor Triac	TO-263 D²-PAK
Qxx08RH3	X	X	-	-	10 mA	-	Alternistor Triac	TO-220R
Qxx08VH3	X	X	-	-	10 mA	-	Alternistor Triac	TO-251 V-PAK
Qxx08DH3	X	X	-	-	10 mA	-	Alternistor Triac	TO-252 D-PAK
Qxx08L4	X	-	-	-	25 mA	-	Triac	TO-220L
Qxx08R4	X	-	-	-	25 mA	-	Triac	TO-220R
Qxx08N4	X	-	-	-	25 mA	-	Triac	TO-263 D²-PAK
Qxx08LH4	X	X	X	X	35 mA	-	Alternistor Triac	TO-220L
Qxx08RH4	X	X	X	X	35 mA	-	Alternistor Triac	TO-220R
Qxx08VH4	X	X	X	X	35 mA	-	Alternistor Triac	TO-251 V-PAK
Qxx08DH4	X	X	X	X	35 mA	-	Alternistor Triac	TO-252 D-PAK
Qxx08NH4	X	X	X	X	35 mA	-	Alternistor Triac	TO-263 D²-PAK
Qxx08L5	-	X	X	X	50 mA	-	Triac	TO-220L
Qxx08R5	-	X	X	X	50 mA	-	Triac	TO-220R
Qxx08N5	-	X	X	X	50 mA	--	Triac	TO-263 D²-PAK

Packing Options

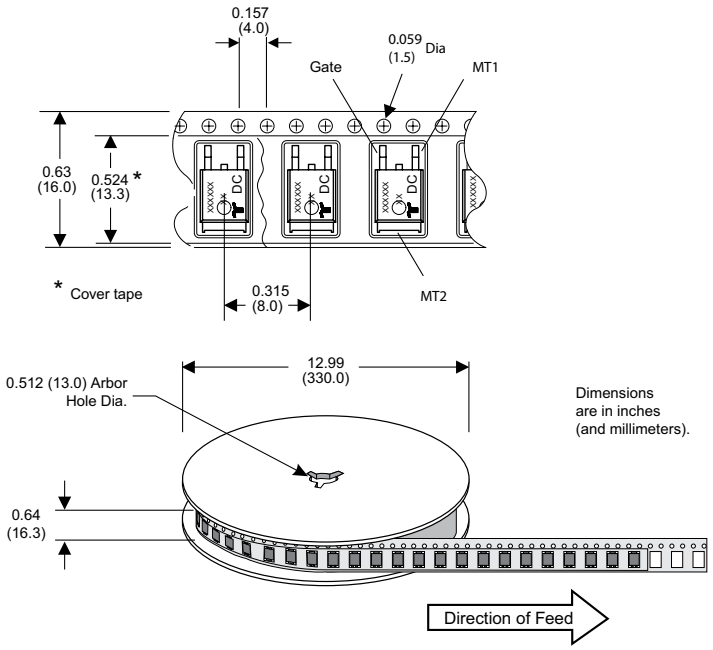
Part Number	Marking	Weight	Packing Mode	Base Quantity
L/Qxx08L/RyyTP	L/Qxx08L/Ryy	2.2 g	Tube Pack	1000 (50 per tube)
Qxx08NyyTP	Qxx08Nyy	1.6 g	Tube	1000 (50 per tube)
Qxx08NyyRP	Qxx08Nyy	1.6 g	Embossed Carrier	500
L/Qxx08DyyTP	L/Qxx08Dyy	0.3 g	Tube	750 (75 per tube)
L/Qxx08DyyRP	L/Qxx08Dyy	0.3 g	Embossed Carrier	2500
L/Qxx08VyyTP	L/Qxx08Vyy	0.4 g	Tube	750 (75 per tube)

Note: xx = voltage, x = package, y = sensitivity, yy = type & sensitivity

Revised: BO.12/09/20

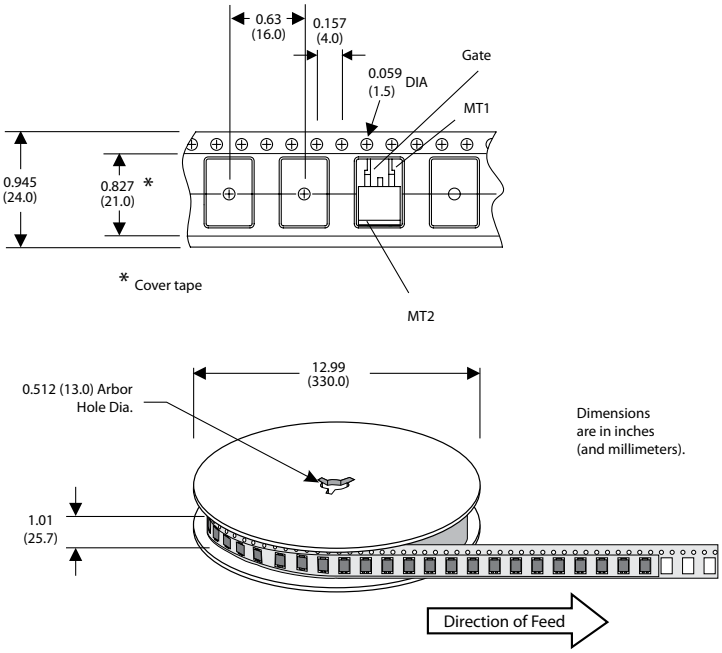
TO-252 Embossed Carrier Reel Pack (RP) Specifications

Meets all EIA-481-2 Standards



TO-263 Embossed Carrier Reel Pack (RP) Specifications

Meets all EIA-481-2 Standards



Revised: BO.12/09/20

Thyristors

8 Amp Sensitive, Standard & Alternistor (High Commutation) Triacs

Part Numbering System

Q 60 08 L 5 56

DEVICE TYPE
L : Sensitive Triac
Q : Triac or Alternistor

VOLTAGE RATING
40 : 400V
60 : 600V
80: 800V
K0 : 1000V

CURRENT
08: 8A

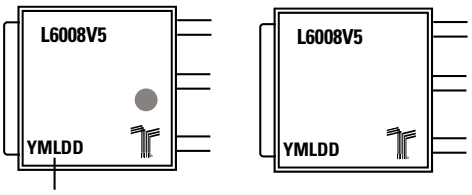
SENSITIVITY & TYPE
Sensitive Triac:
6 : 5 mA (QI, II, III)
10 mA (QIV)
8 : 10 mA (QI, II, III)
20 mA (QIV)
Standard Triac:
4 : 25 mA (QI, II, III)
5 : 50 mA (QI, II, III)
Alternistor Triac:
H3 : 10 mA (QI, II, III)
H4 : 35 mA (QI, II, III)

PACKAGE TYPE
L : TO-220 Isolated
R : TO-220 Non-Isolated
N: TO-263 (D^2PAK)
V : TO-251 (VPAK)
D : TO-252 (DPAK)

LEAD FORM DIMENSIONS
xx : Lead Form Option

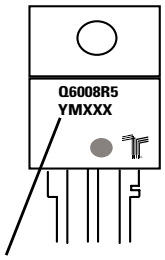
Part Marking System

TO-251AA – (V Package)
TO-252AA – (D Package)



Date Code Marking
Y:Year Code
M: Month Code
L: Location Code
DD: Calendar Code

TO-220 AB - (L and R Package)
TO-263 AB - (N Package)



Date Code Marking
Y:Year Code
M: Month Code
XXX: Lot Trace Code

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Littelfuse:

L4008L8 L6008L8 Q2008R4 Q2008L4 Q4008L4 Q4008LH4 Q2008LH4 Q6008LH4 Q8008R5 Q6008LH453 Q6008VH4 Q6008LH458 Q8008DH3 Q4008L455 Q4008L458 Q8008LH4 Q4008DH4 Q6008DH4 Q4008DH3 QK008DH3 QK008DH4 Q8008L5 Q6008R5 Q6008L5 QK008LH4 QK008R5 Q4008RH467 L4008L6 Q4008VH3 Q4008R4 QK008L5 L6008L655 Q8008VH3 Q6008R559 L4008L656 L2008L6 L2008L8 Q4008VH4 Q6008L559 Q6008L555 QK008VH4 QK008VH3 L6008L6 QK008RH4 Q4008RH4 Q6008RH4 Q2008RH4 Q6008L556 Q4008R456 Q8008RH4 L4008D8RP L2008D8RP L6008D8RP L4008D8TP L2008D8TP L6008D8TP L4008L8TP L6008V8TP L2008V8TP L4008V8TP L4008D6TP L6008D6TP L2008D6TP L6008D6RP L2008D6RP L4008D6RP L6008L6TP Q4008L4TP L6008L8TP QK008N5RP Q6008N5RP Q8008N5RP QK008N5TP Q6008N5TP Q8008N5TP Q8008NH4TP Q4008NH4TP Q4008NH4RP QK008NH4TP QK008NH4RP Q4008DH4TP Q4008DH4RP Q6008DH4TP Q6008DH4RP Q8008DH4RP Q8008DH4TP Q4008N4TP Q2008N4TP Q4008N4RP Q2008N4RP Q2008DH4TP Q2008DH4RP Q8008L5TP Q4008VH3TP Q6008VH3TP Q2008VH3TP Q2008VH4TP Q6008VH4TP Q4008VH4TP Q4008DH3RP