

Single Thyristor, 160A

FEATURES

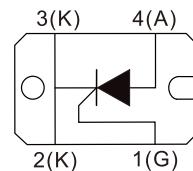
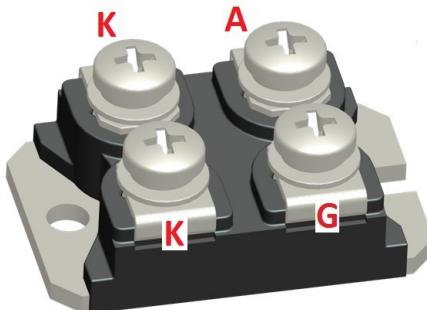
- Thyristor for line frequency
- Planar passivated chip
- Long-term stability
- Advance power cycling
- UL approved file E320098
- Compliant to RoHS

APPLICATIONS

- Line rectifying 50/60Hz
- DC Motor control
- Softstart AC motor control
- AC power control
- Power converter
- Light and temperature control

PACKAGE (SOT-227)

- Isolation voltage:3000V
- Industry standard outline
- Epoxy meets UL 94V-0
- Copper base plate, internally DCB isolated



PRODUCT SUMMARY

I _{T(AV)}	158A
V _{DRM/V_{RRM}}	1200~1600 V
I _{GT}	30~100 mA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Maximum RMS on-state current	I _{T(RMS)}	180° conduction half sine wave, 50Hz	248	A
Maximum average on-state current	I _{T(AV)}	180° conduction half sine wave, 50Hz	158	A
Maximum non-repetitive peak on-state surge current (full cycle, T _J initial = 25°C)	I _{TSM}	F = 50 Hz	2500	A
		F = 60 Hz	2625	
Maximum I ² t Value for fusing	I ² t	t _p = 10 ms	31250	A ² s
Critical rate of rise of on-state current	di/dt	V _D = 67% V _{DRM} , t _p = 200μs, I _G = 0.3A di _G /dt = 0.3A/μs, F = 50 Hz	150	A/μs
Peak gate current	I _{GM}	T _p = 20 μs	3	A
Maximum gate power	P _{GM}	T _p = 20μs	10	W
Average gate power dissipation	P _{G(AV)}	T _J = 150°C	3	W
Repetitive peak off-state voltage	V _{DRM}	T _J = 150°C	1200~1600	V
Repetitive peak reverse voltage	V _{RRM}			
Maximum power dissipation	P _D	T _C = 25°C	625	W
Storage temperature range	T _{stg}		- 40 to + 150	°C
Maximum junction temperature range	T _J		- 40 to + 150	
Maximum operation temperature	T _{OP}		- 40 to + 125	

ELECTRICAL SPECIFICATIONS ($T_J = 25^\circ\text{C}$ unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS		Value		Unit
				Min.	Typ.	
Gate trigger current	I_{GT}	$V_D = 6\text{V}$, $R_L = 30\Omega$	$T_J = 150^\circ\text{C}$	30	-	mA
Gate trigger voltage	V_{GT}			-	-	1.4 V
Gate non-trigger voltage	V_{GD}	$V_D = \frac{2}{3} V_{DRM}$	$T_J = 150^\circ\text{C}$	-	-	0.25 V
Gate non-trigger current	I_{GD}	$V_D = \frac{2}{3} V_{DRM}$	$T_J = 150^\circ\text{C}$	-	-	10 mA
Holding current	I_H	$I_T = 1\text{A}$, Gate open		-	-	250 mA
Latching current	I_L	$I_G = 1.2 \times I_{GT}$		-	-	350 mA
Critical rate of rise of voltage	dV/dt	$V_D = \frac{2}{3} V_{DRM}$, Gate open	$T_J = 150^\circ\text{C}$	-	-	1000 V/ μ s
Forward voltage drop	V_{TM}	$I_T = 150\text{A}$, $t_p = 380\mu\text{s}$	$T_J = 25^\circ\text{C}$	-	-	1.35 V
Off-state and reverse leakage current	I_{DRM} I_{RRM}	$V_D = V_{DRM}$, $V_R = V_{RRM}$	$T_J = 25^\circ\text{C}$	-	-	50 μ A
			$T_J = 150^\circ\text{C}$	-	-	10 mA
RMS isolation voltage	V_{ISO}	50Hz, circuit to base, all terminals shorted, $I_{ISO} \leq 1\text{mA}$	$t = 1\text{ min}$	2500	-	V
			$t = 1\text{ s}$	3000	-	
Maximum threshold voltage	$V_{T(TO)}$		$T_J = 150^\circ\text{C}$	-	-	0.85 V
Maximum slope resistance	r_T		$T_J = 150^\circ\text{C}$	-	-	3.4 m Ω

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUE	UNIT
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.20	$^\circ\text{C/W}$	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface flat, smooth and greased		0.10	$^\circ\text{C/W}$	
Mounting force, $\pm 10\%$ to heatsink, M4 busbar, M4		A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound			1.1	N.m
					1.1	
Approximate weight					30	g
					1.06	oz.
Case style		JEDEC			SOT-227	

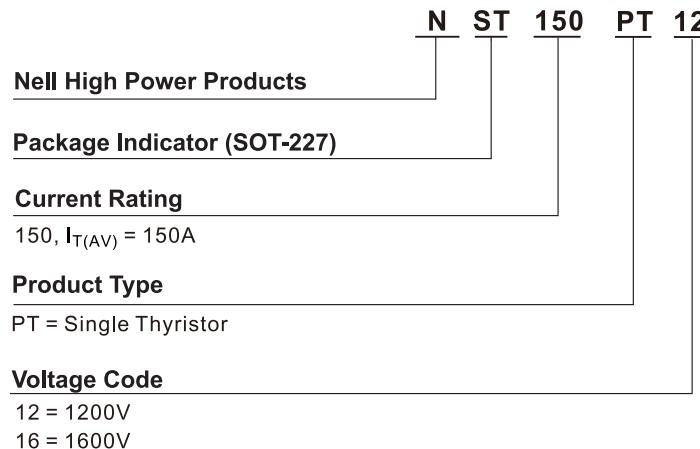
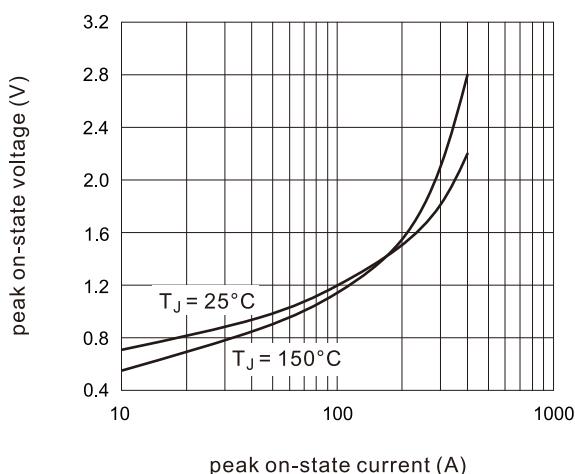
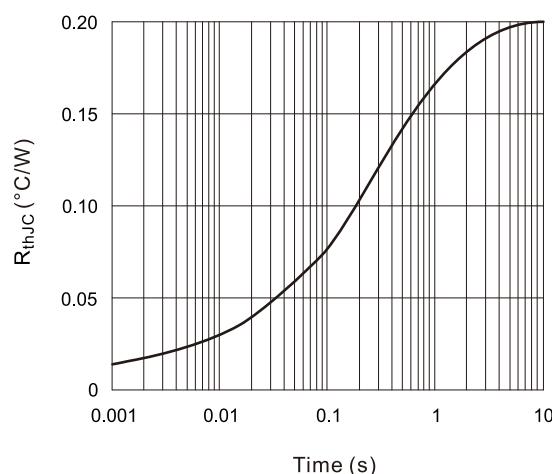
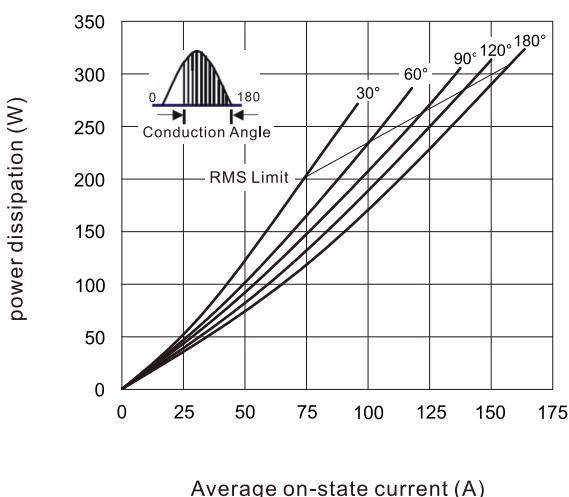
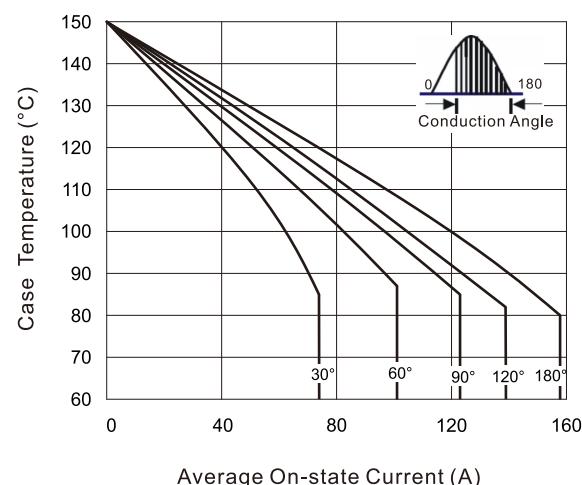
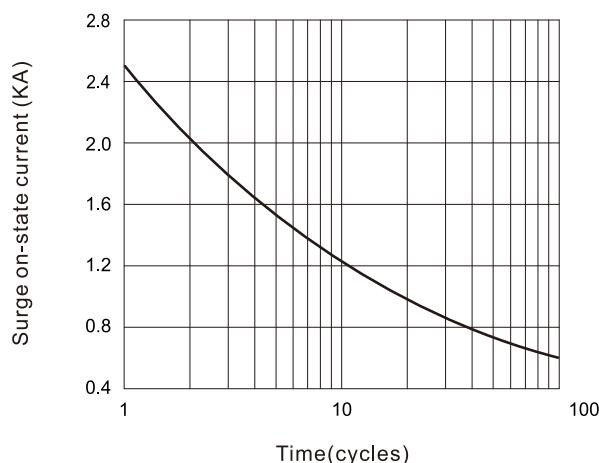
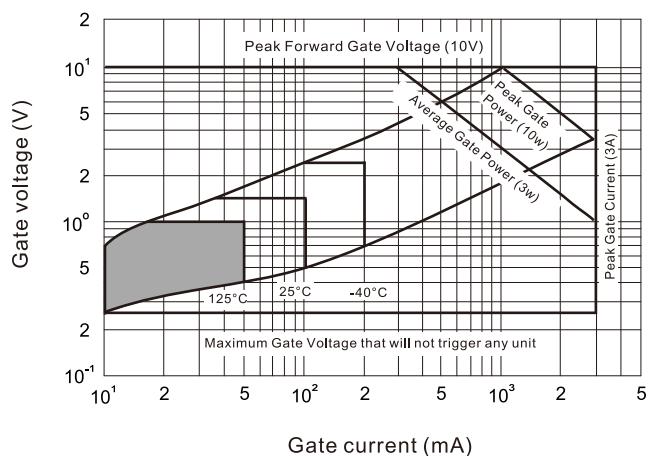
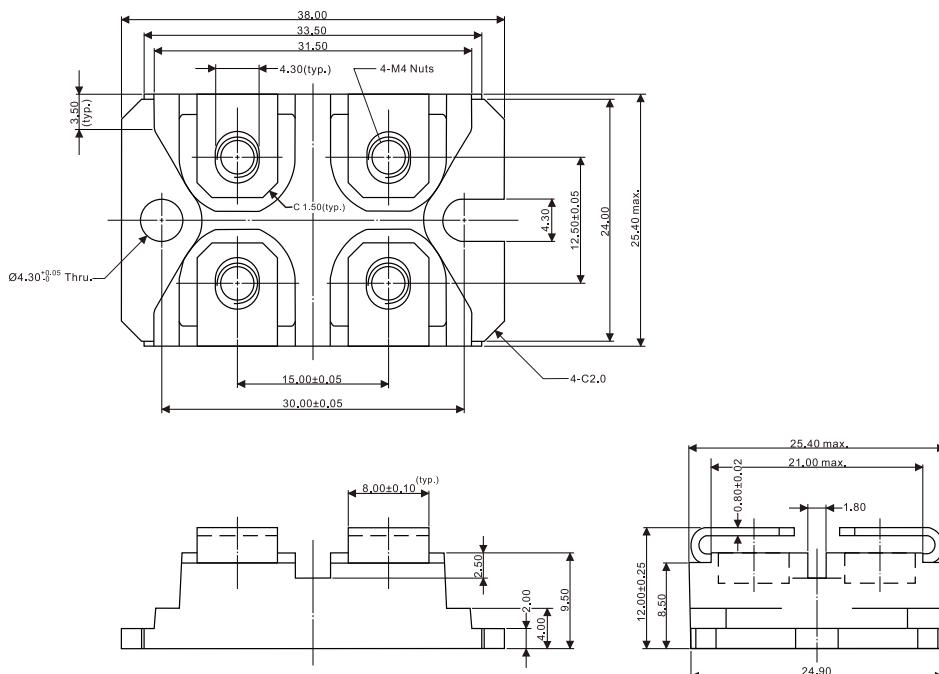
ORDERING INFORMATION SCHEME

Fig.1 Peak on-state voltage vs. peak on-state current

Fig.2 Max. junction to case thermal Impedance vs. time

Fig.3 Power dissipation vs. average on-state current

Fig.4 Case Temperature Vs. Average On-state Current


Fig.5 Surge on-state current vs. cycles

Fig.6 Gate characteristics


Case Style

SOT-227


All dimensions in millimeters