

**Description**

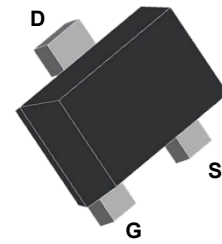
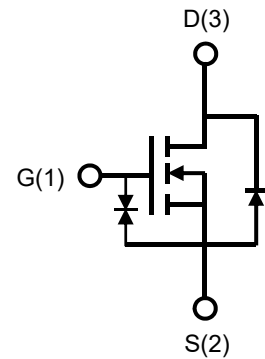
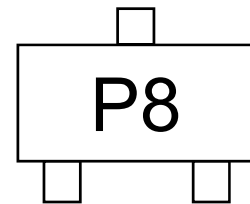
MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(\Omega)$	$I_D(A)$
60	2.1 @ $V_{GS} = 10V$	0.2
	2.5 @ $V_{GS} = 4.5V$	

**Feature**

- Low Gate Charge
- Excellent  $R_{DS(ON)}$

**Applications**

- Backlighting
- Solid-state relays
- Battery operated systems


**SOT-723  
(Top View)**

**Circuit Diagram**

**Marking (Top View)**
**Absolute maximum rating@25°C**

Rating		Symbol	Value	Units
Drain-Source Voltage		$V_{DS}$	60	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current-Continuous <sup>1)</sup>	$T_C=25^\circ C$	$I_D$	0.2	A
	$T_C=70^\circ C$		0.16	
Pulsed Drain Current <sup>2)</sup>		$I_{DM}$	0.75	A
Total Power Dissipation <sup>4)</sup>	$T_C=25^\circ C$	$P_D$	156	mW
	$T_C=70^\circ C$		100	
Thermal Resistance , Junction-to-Ambient <sup>3)</sup>		$R_{\theta JA}$	800	$^\circ C/W$
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55~+150	$^\circ C$

## Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$	-	-	1.0	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 10$	$\mu A$
<b>On Characteristics<sup>4)</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 300mA$	-	1.5	2.1	$\Omega$
		$V_{GS} = 4.5V, I_D = 200mA$	-	1.7	2.5	
<b>Dynamic Characteristics<sup>5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 30V, V_{GS} = 0V,$ $f = 1.0MHz$	-	20	-	$\mu F$
Output Capacitance	$C_{oss}$		-	8.0	-	
Reverse Transfer Capacitance	$C_{rss}$		-	3.5	-	
<b>Switching Characteristics<sup>5)</sup></b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 30V, V_{GS} = 10V,$ $R_G = 3\Omega, I_D = 0.2A$	-	3.0	-	ns
Turn-on Rise Time	$t_r$		-	2.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	14	-	
Turn-Off Fall Time	$t_f$		-	5.5	-	
Total Gate Charge	$Q_g$	$V_{DS} = 10V,$ $V_{GS} = 0 \text{ to } 4.5V,$ $I_D = 0.2A$	-	0.9	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.5	-	
Gate-Drain Charge	$Q_{gd}$		-	0.2	-	
<b>Drain-Source Diode Characteristics<sup>5)</sup></b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 0.2A$	-	0.9	1.2	V
Maximum Pulsed Drain to Source Diode Forward Current	$I_{SM}$	-	-	-	1.2	A
Diode Forward Current	$I_S$	-	-	-	0.2	A

## Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Device surface mounted on FR4 PCB measured at steady state.
4. Measured under pulsed conditions. Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
5. Guaranteed by design, not subject to production

## Typical Characteristics

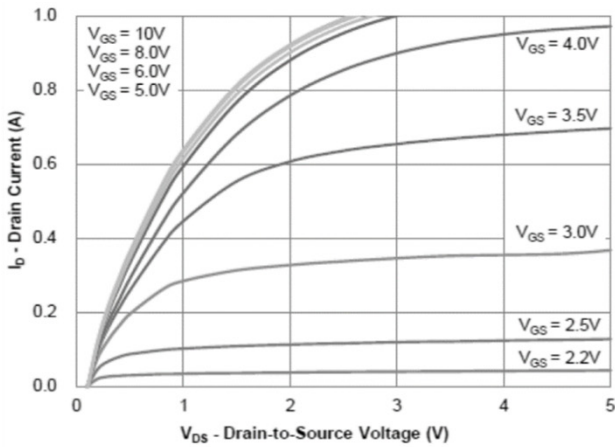


Figure 1: Output Characteristics

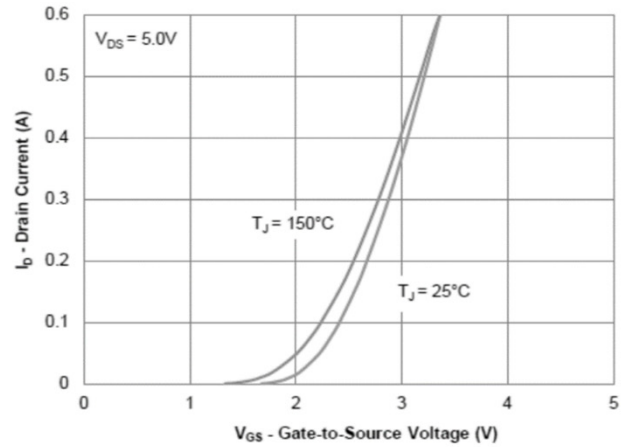


Figure 2: Transfer Characteristics

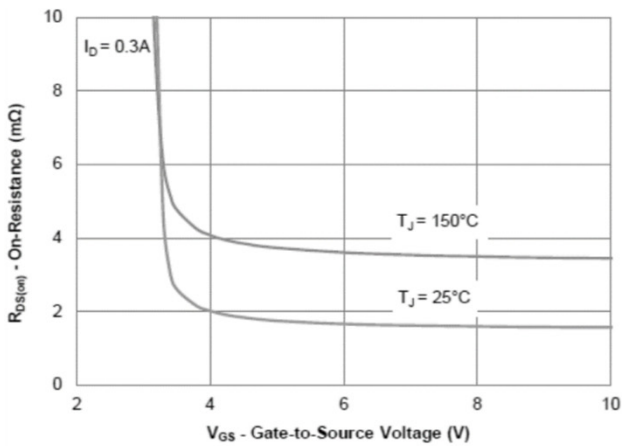


Figure 3: On-Resistance vs. Gate-Source Voltage

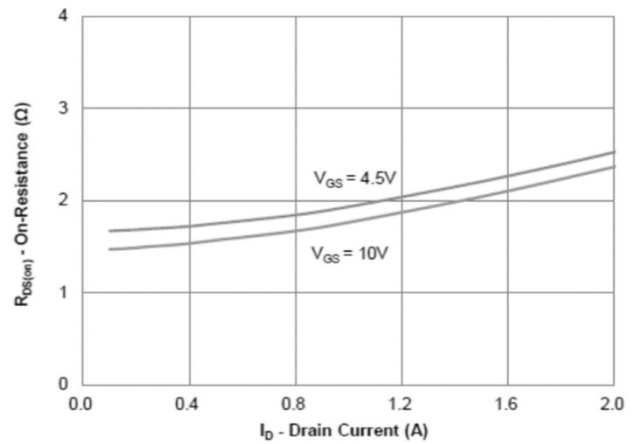


Figure 4: On-Resistance vs. Drain Current

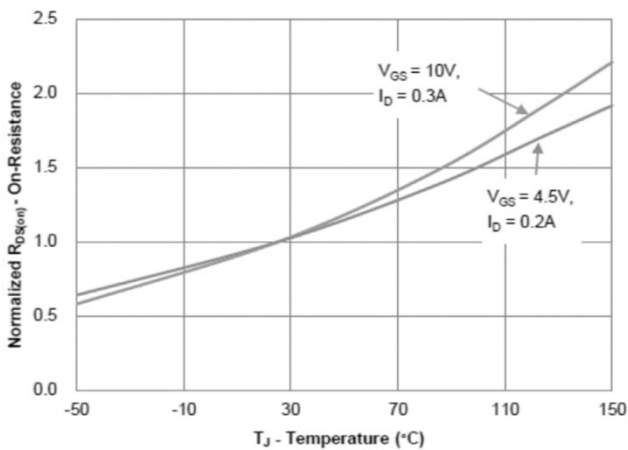


Figure 5: On-Resistance vs. Junction Temperature

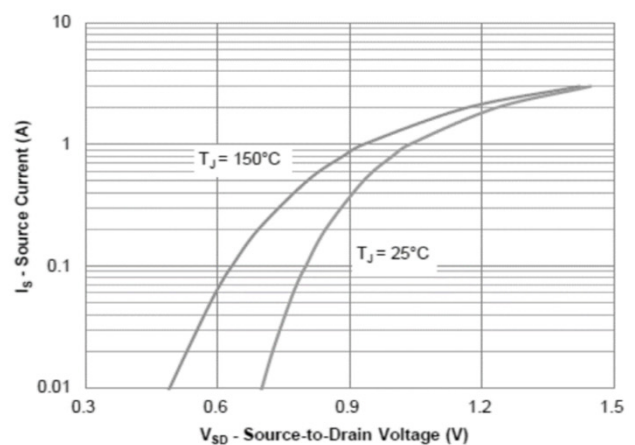


Figure 6: Source-Drain Diode Forward Voltage

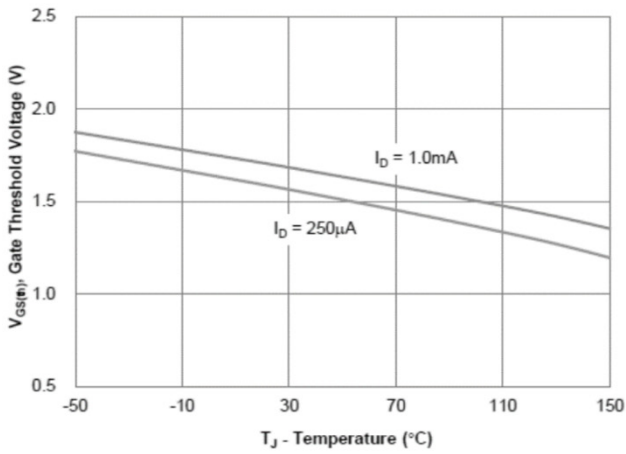


Figure 7: Gate Threshold Variation vs. Junction Temperature

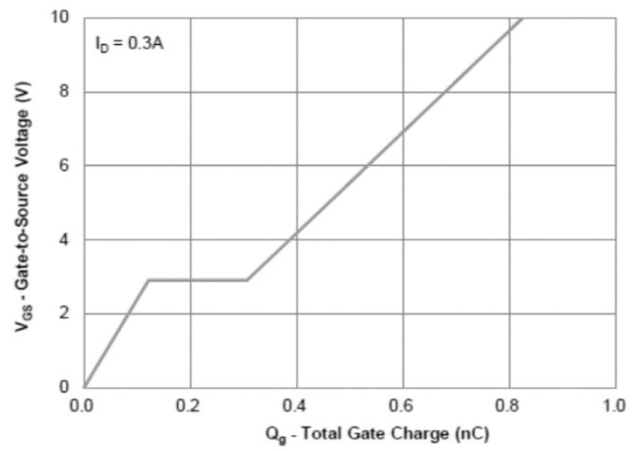


Figure 8: Gate Charge Characteristics

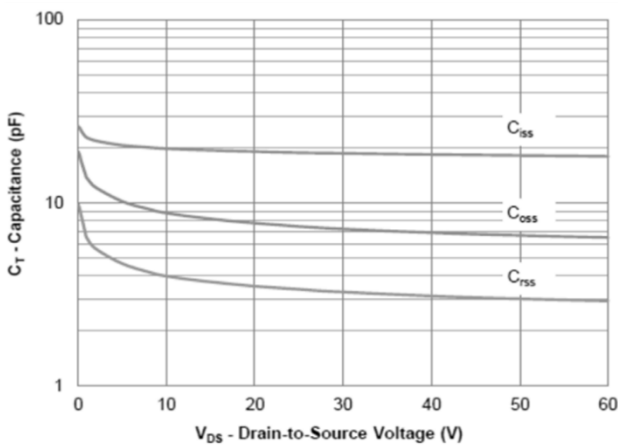


Figure 9: Capacitance Characteristics

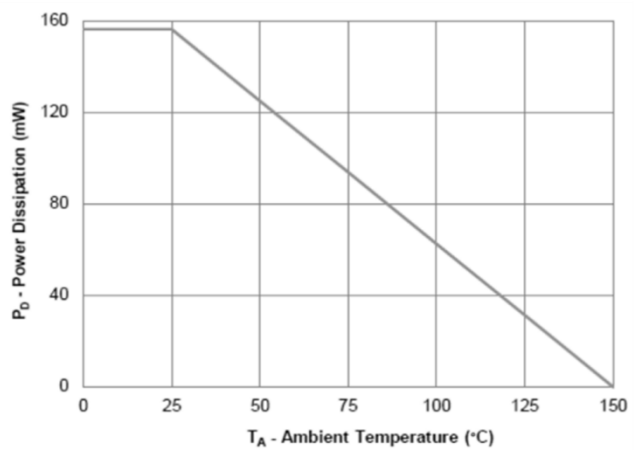


Figure 10: Power Derating

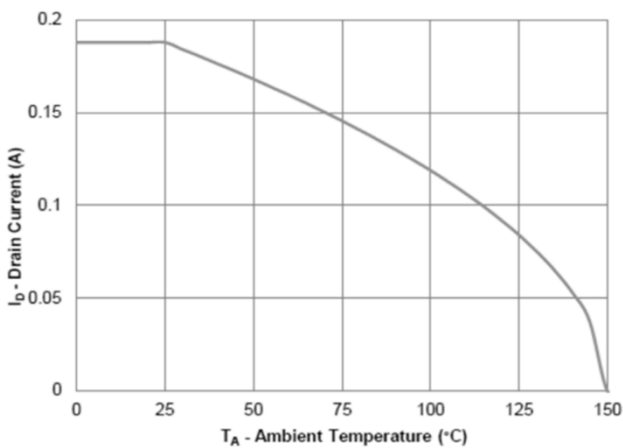


Figure 11: Current Derating

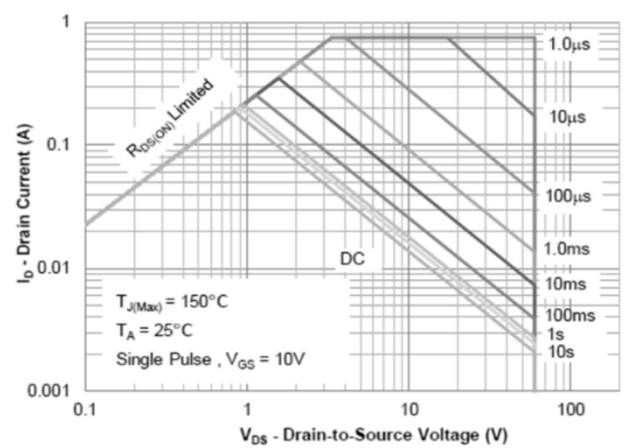


Figure 12: Safe Operating Area

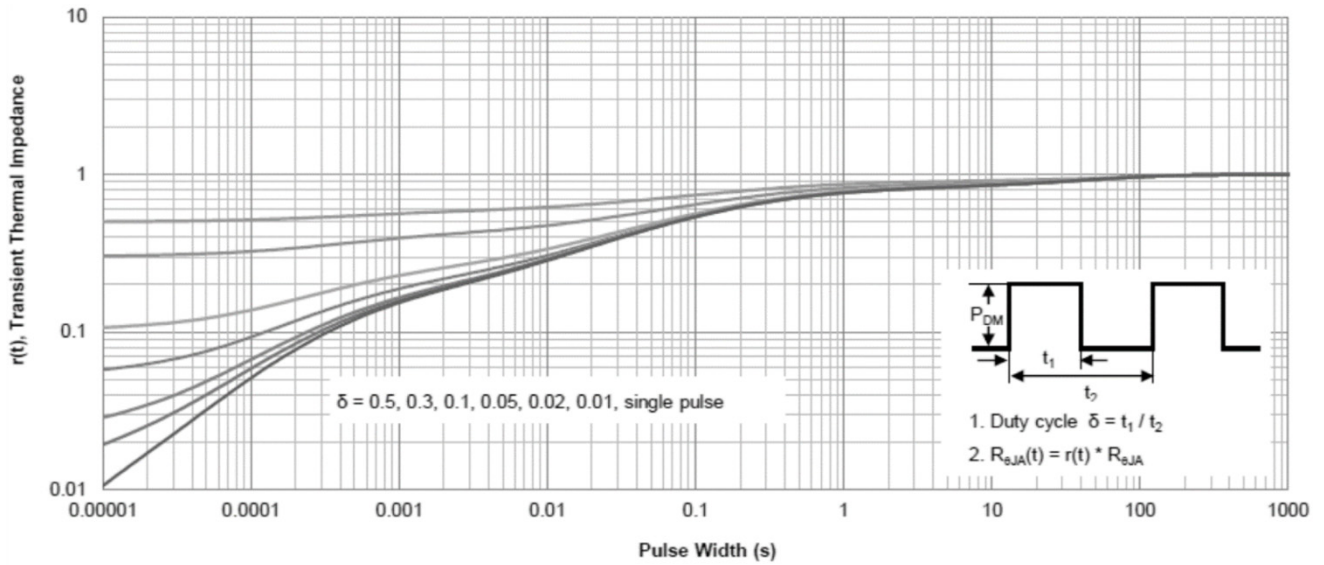
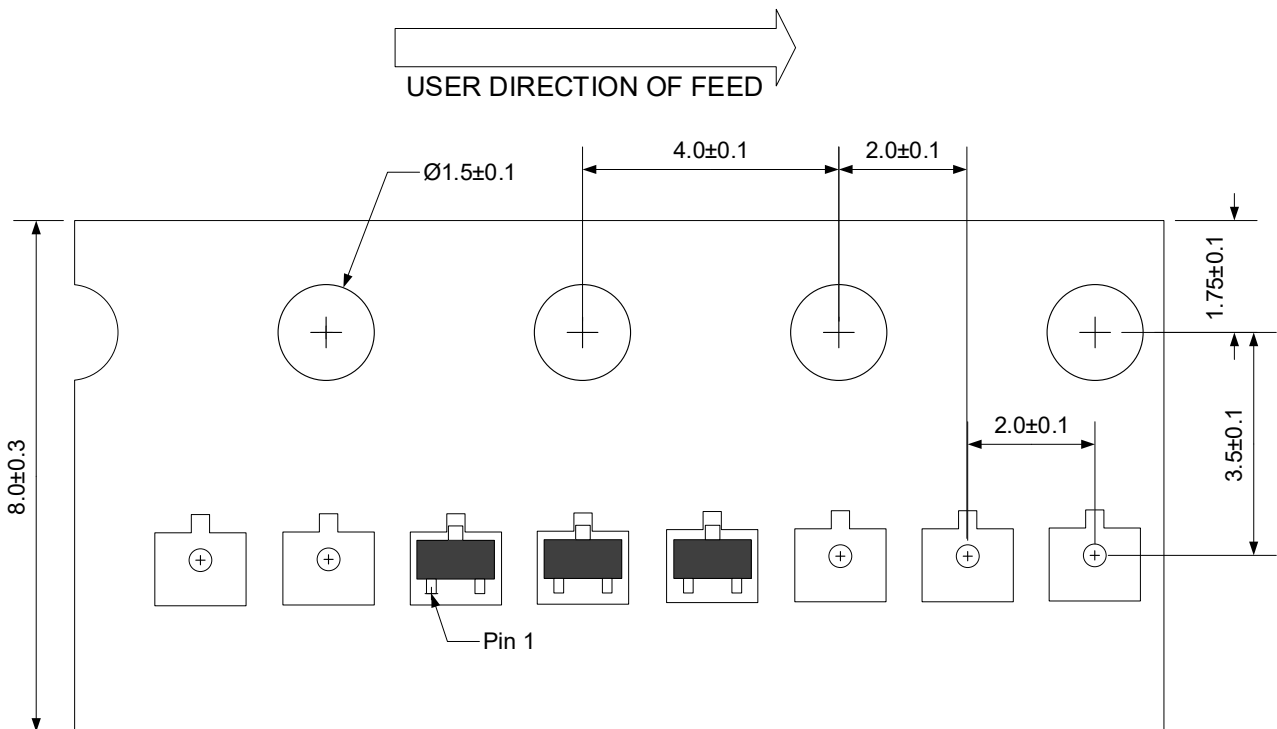


Figure 13: Normalized Maximum Transient Thermal Impedance

Ordering information

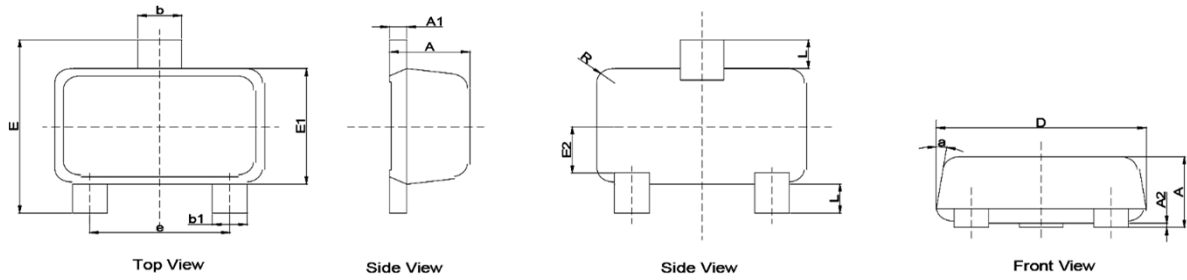
Device	Package	Reel	Shipping
PNM723T7002E	SOT-723	7"	10000 / Tape & Reel

Load with information

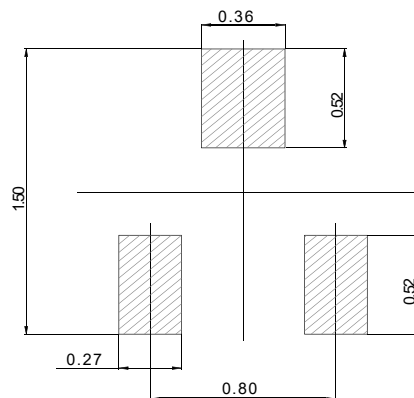


Unit:mm

## Product Dimension (SOT-723)




Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.41	0.51	0.016	0.020
A1	0.05	0.15	0.002	0.006
A2	-	0.05	-	0.002
b	0.20	0.30	0.008	0.012
b1	0.15	0.25	0.006	0.010
D	1.10	1.30	0.043	0.051
E	1.10	1.30	0.043	0.051
E1	0.70	0.90	0.028	0.035
E2	0.33 Ref.		0.013 Ref.	
L	0.15	0.25	0.006	0.010
R	0.10 Ref.		0.004 Ref.	
$\theta$	0°	8°	0°	8°



Unit: mm

Suggested PCB Layout


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