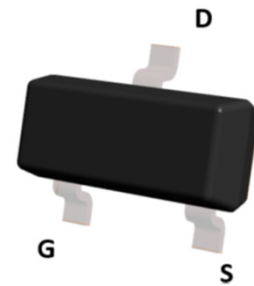


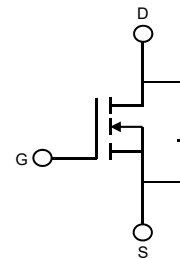
## Description

The MOSFET provide the best combination of fast switching , low on-resistance and cost-effectiveness.

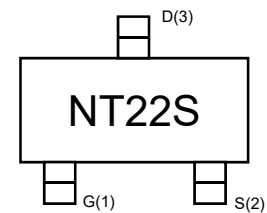
- Trench Power LV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage



**Top View**



**Circuit Diagram**



**Marking (Top View)**

### MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
20	50@ $V_{GS}=4.5V$	3.0

## Applications

- Battery operated systems
- Solid-state relays
- Direct logic-level interface: TTL/CMOS

## Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Drain-source Voltage	$V_{DS}$	20	V
Gate-source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current	$I_D$	3.0	A
Pulsed Drain Current	$I_{DM}$	11.5	A
Total Power Dissipation	$P_D$	0.75	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C

## Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case <sup>1)</sup>	$R_{\theta JC}$	-	27	-	°C/W
Thermal Resistance, Junction-to-Ambient <sup>1)</sup>	$R_{\theta JA}$	-	122	-	°C/W

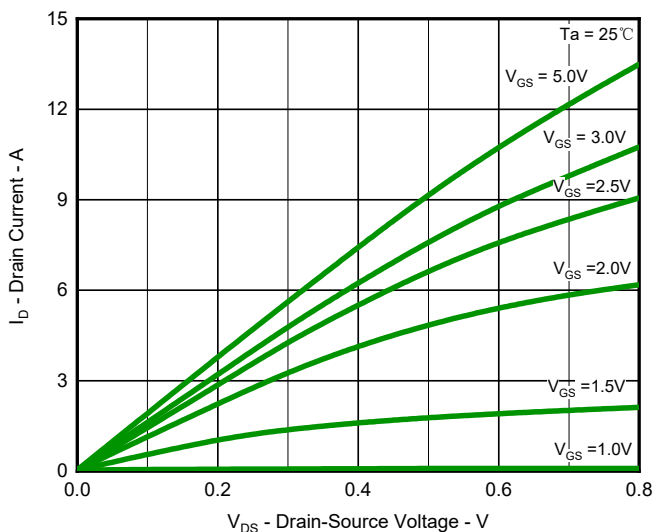
Notes:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.

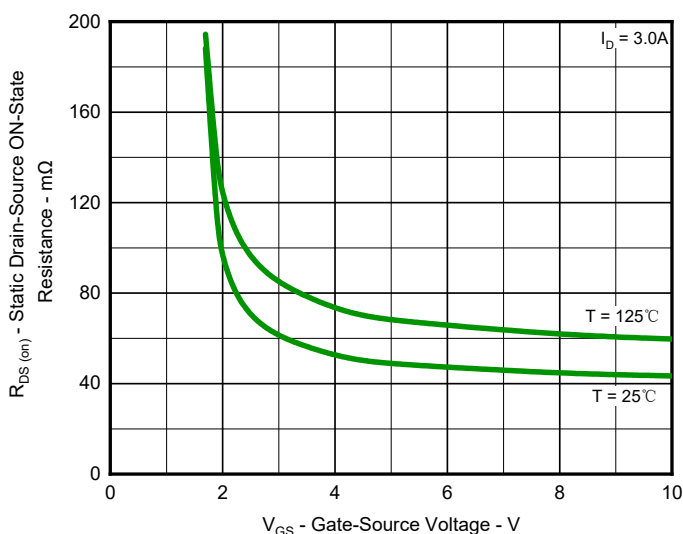
## Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
<b>OFF Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1.0	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	-	1.1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3A$	-	50	60	m $\Omega$
		$V_{GS} = 2.5V, I_D = 2A$	-	75	90	
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1A$	-	0.76	1.2	V
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	-	121	-	pF
Output Capacitance	$C_{oss}$		-	28	-	
Reverse Transfer Capacitance	$C_{rss}$		-	25.5	-	
<b>Switching Parameters</b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 10V, I_D = 1A,$ $V_{GS} = 4.5V, R_G = 6\Omega$	-	4.0	-	ns
Turn-on Rise Time	$t_r$		-	17	-	
Turn-Off Delay Time	$t_{d(off)}$		-	5.0	-	
Turn-Off Fall Time	$t_f$		-	5.0	-	
Total Gate Charge	$Q_g$	$V_{DS} = 10V, I_D = 3.6A,$ $V_{GS} = 4.5V$	-	3.8	-	nC
Gate-Source Charge	$Q_{gs}$		-	0.2	-	
Gate-Drain Charge	$Q_{gd}$		-	0.6	-	

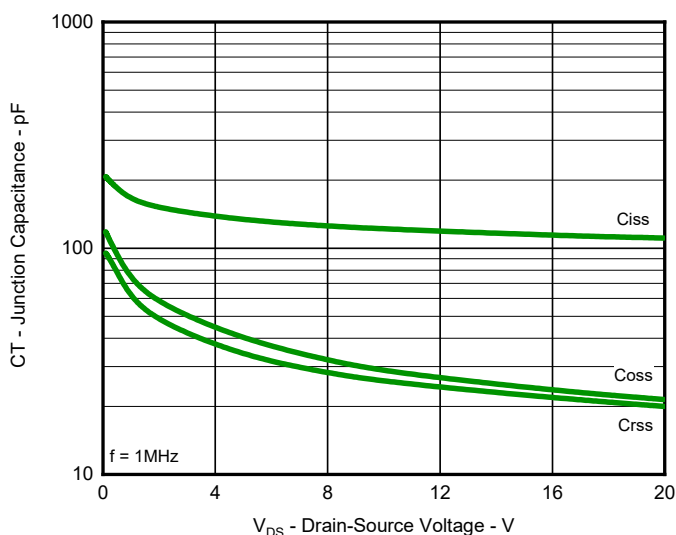
## Typical Characteristics



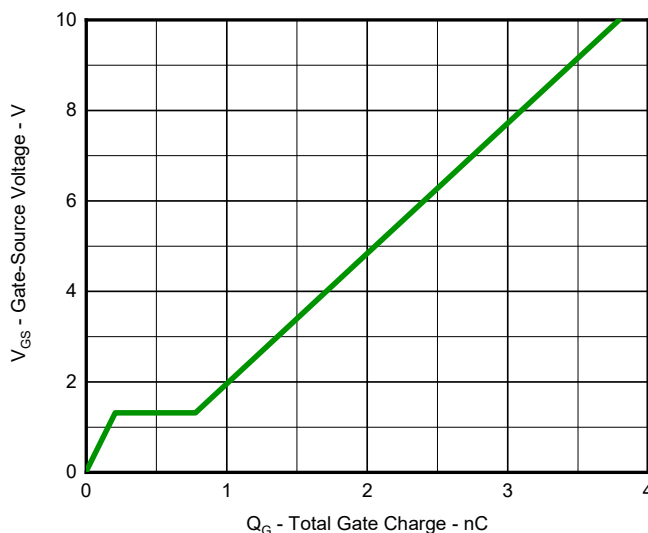
**Fig.1 Output Characteristics**



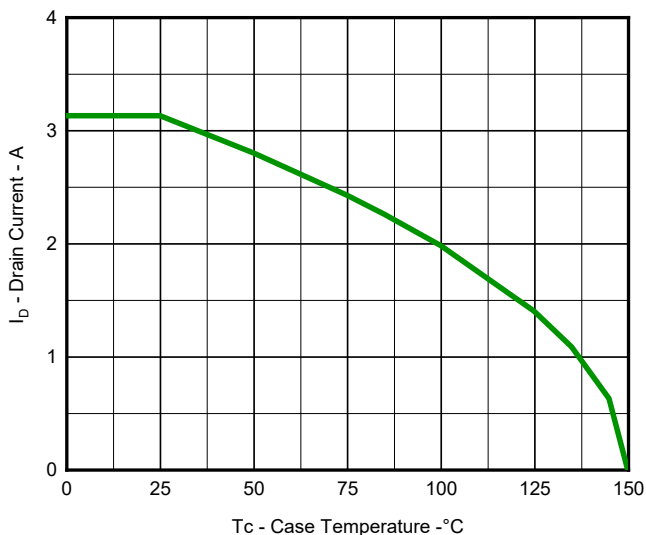
**Fig.2 On-Resistance vs. Gate-Source Voltage**



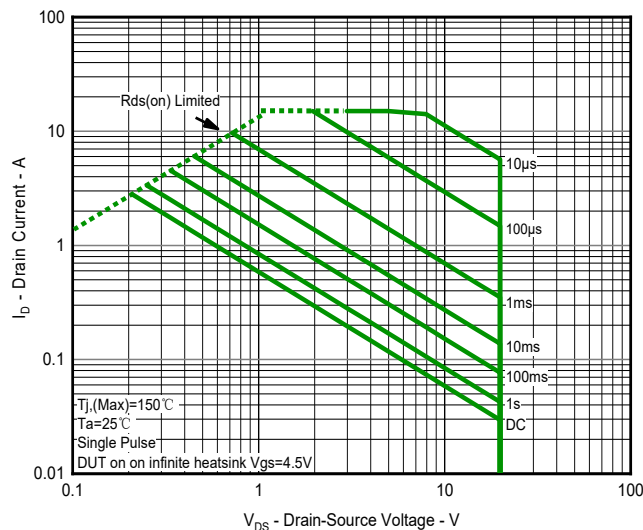
**Fig.3 Typical Junction Capacitance**



**Fig.4 Gate Charge Characteristics**



**Fig.5 Maximum Drain Current vs. Case Temperature**



**Fig.6 Safe Operation Area**

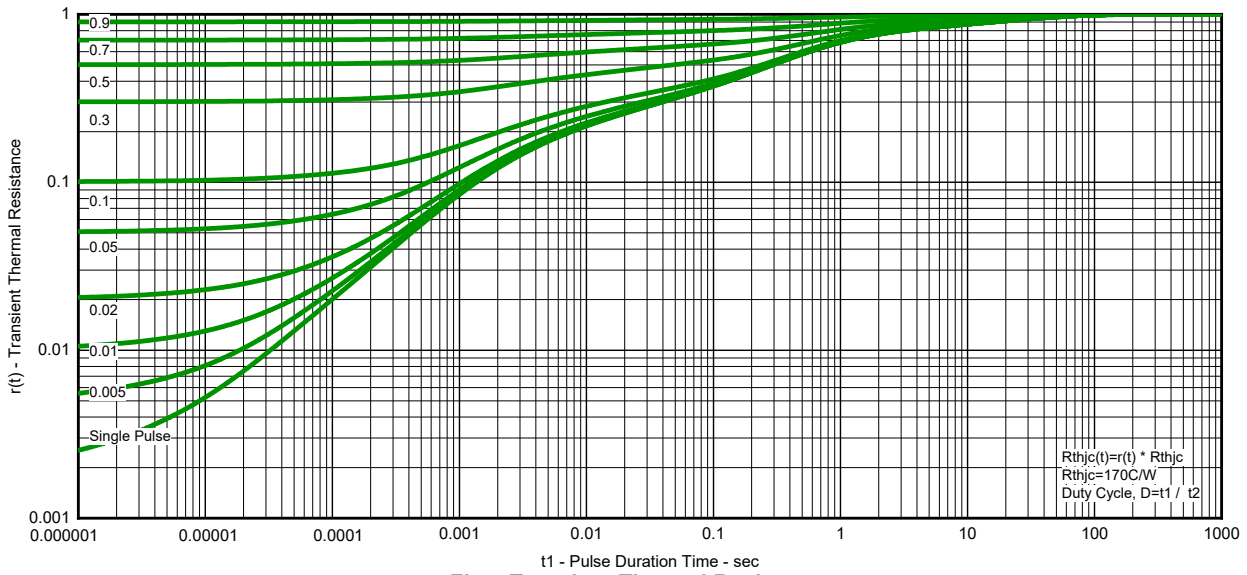
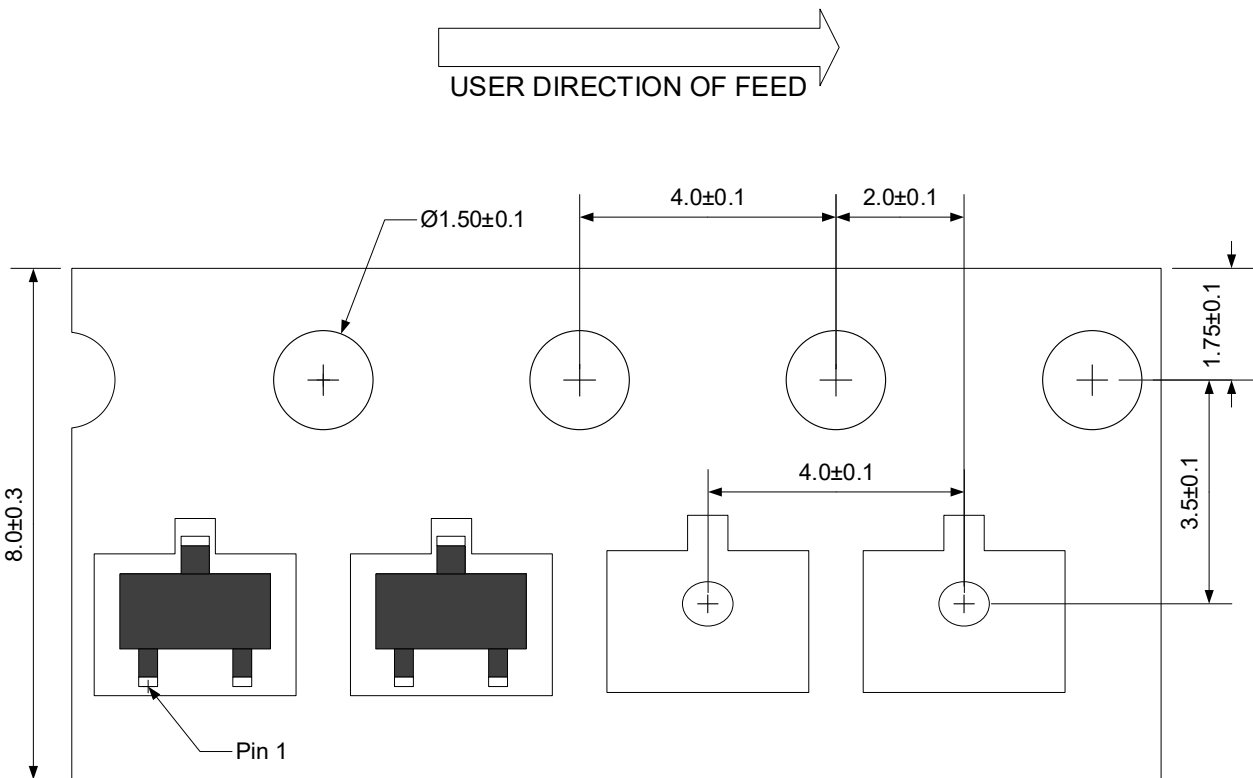


Fig.7 Transient Thermal Resistance

Ordering information

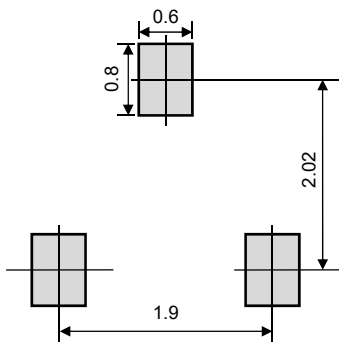
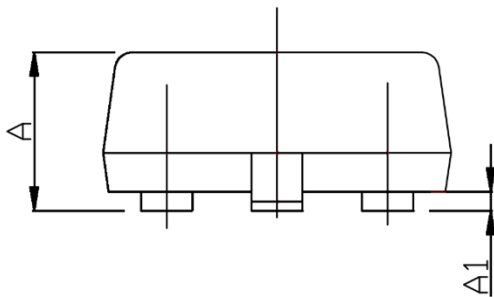
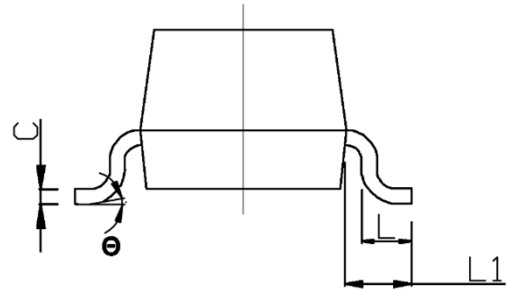
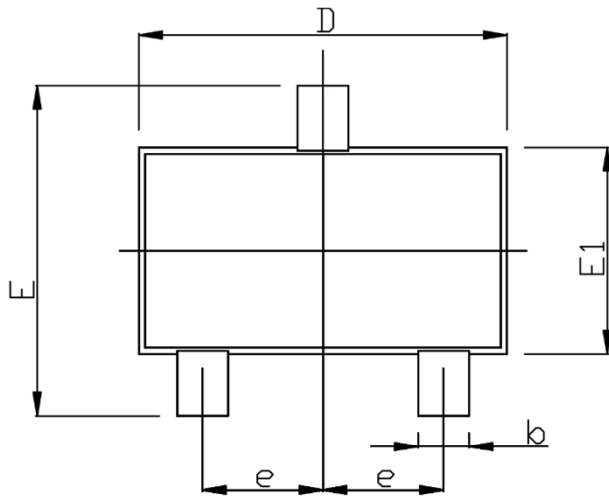
Device	Package	Reel	Shipping
PNMT20V2SA	SOT-23 (Pb-Free)	7"	3000 / Tape & Reel

Load with information



Unit:mm

## Product dimension (SOT-23)




Suggested PCB Layout

Unit:mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	-	1.35	-	0.053
A1	0.04	0.15	0.002	0.006
b	0.30	0.50	0.012	0.020
c	0.08	0.21	0.003	0.008
D	2.72	3.12	0.107	0.123
E	2.10	2.64	0.083	0.104
E1	1.10	1.50	0.043	0.059
e	0.95 BSC		0.037 BSC	
L	0.20	0.48	0.008	0.019
L1	0.50	0.60	0.020	0.024
θ	0°	8°	0°	8°


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