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TPM1002NS3
N-Channel MOSFET

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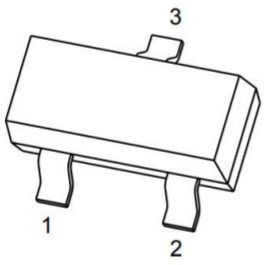
Product Summary

- V_{DS} 100 V
- I_{DS} (V_{GS}=10V) 2 A
- $R_{DS(ON)}$ (V_{GS}=10V) ≤250mΩ (Typ)

Application

- Interfacing Switching
- DC-DC Converters
- Power management functions

Package and Pin Configuration



1. GATE
2. SOURCE
3. DRAIN

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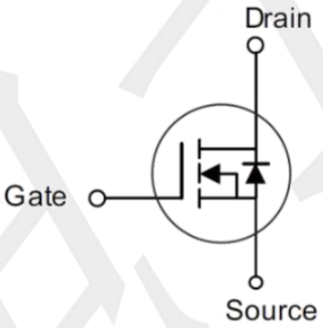
Circuit diagram



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current TA=25°C		I_D	2.0	A
Continuous Drain Current TA=70°C		I_D	1.6	A
Pulsed Drain Current (t = 100 μs)		I_{DM}	8.0	A
Maximum Power Dissipation	TA=25℃	P_D	1.2	W
	TA=70℃		0.8	W
Operating Junction Temperature Range		T_J	-55 to +150	℃
Storage Temperature Range		T_{stg}	-55 to +150	℃

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Thermal Resistance from Junction to Ambient(t≤10s)	PCB Mount (Note)	$R_{\theta JA}$	105	°C/W

Note : When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 10μA	BV_{DSS}	100	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D= 250μA	$V_{GS(th)}$	1.1	2.0	3.0	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 100V, V_{GS}=0V	I_{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= 10V, I_D= 2.0A	R_{DS}(on)	--	250	280	mΩ
	V_{GS}= 4.5V, I_D= 2.0A		--	260	310	
Forward Transconductance (Note 2)	V_{DS}= 5V, I_D= 1.0A	g_{fs}	--	36	--	S
Dynamic (Note 2)						
Input Capacitance	V_{DS} = 50V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	330	--	pF
Output Capacitance		C_{oss}	--	88	--	
Reverse Transfer Capacitance		C_{rss}	--	17	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DS} = 50V, V_{Gs}= 10V, I_D = 1.3A, R_G = 1Ω.	$t_{d(on)}$	--	14	--	nS
Rise Time (Note 3)		t_r	--	54	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	18	--	
Fall Time (Note 3)		t_f	--	11	--	
Total Gate Charge	V_{DS} = 50V, I_D= 2A, V_{GS}= 10V	Qg	--	5.3	--	nC
Gate Source Charge		Qgs	--	1.4	--	
Gate Drain Charge		Qgd	--	1.8	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_F = 1A	V_{SD}	--	0.8	1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	2.0	A
Pulsed Current (Note 1)		I_{SM}	--	--	8.0	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

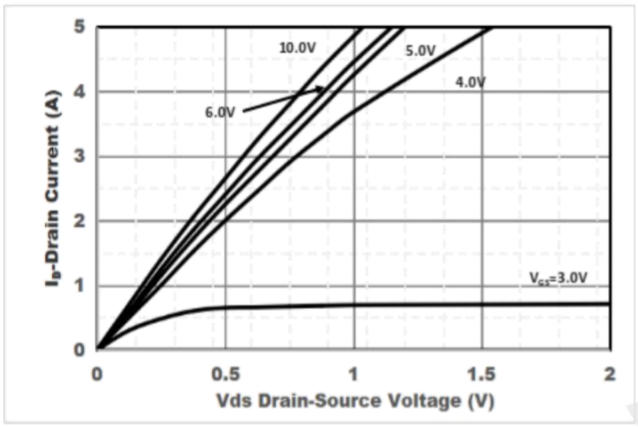


Figure1. Output Characteristics

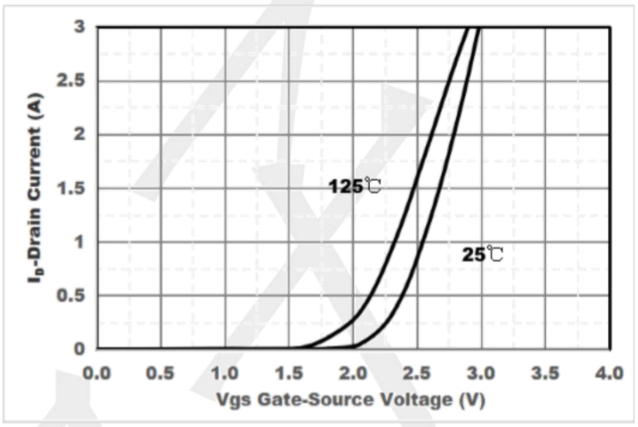


Figure2. Transfer Characteristics

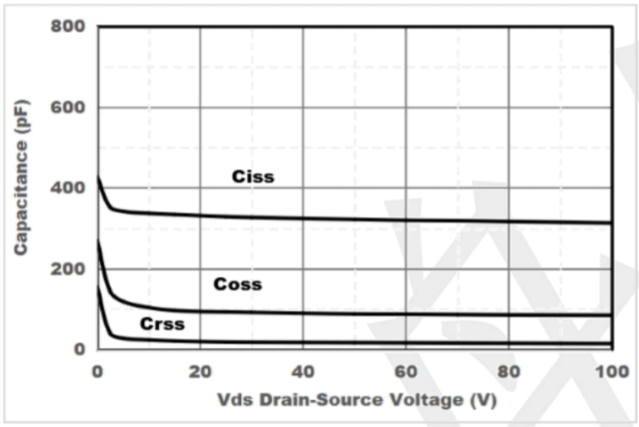


Figure3. Capacitance Characteristics

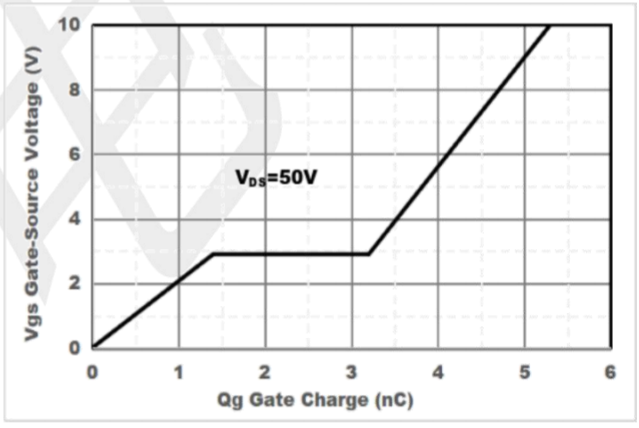


Figure4. Gate Charge

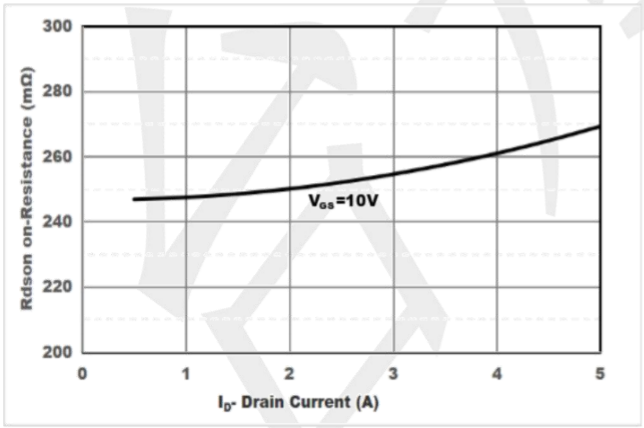


Figure5. Drain-Source on Resistance

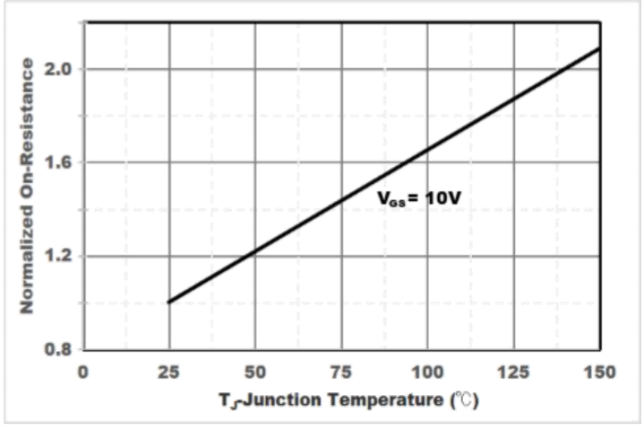


Figure6. Drain-Source on Resistance

Package Outline Dimensions (unit: mm)

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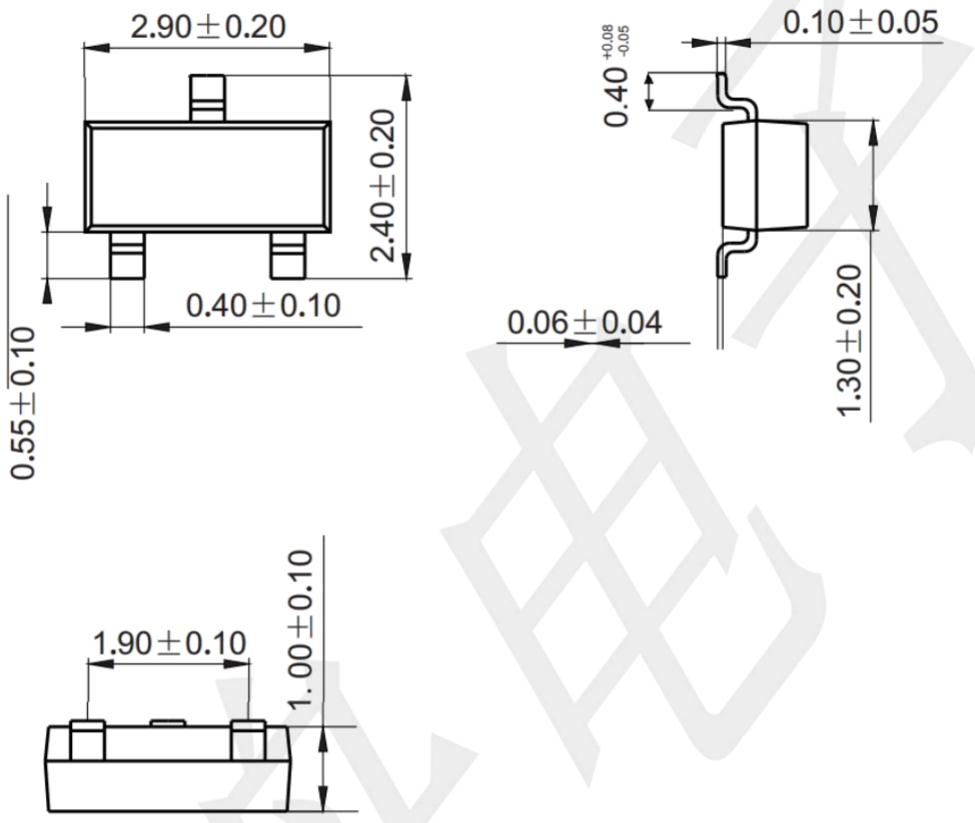

Mounting Pad Layout (unit: mm)

