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NTR4171PT1G

30V N-Channel MOSFET

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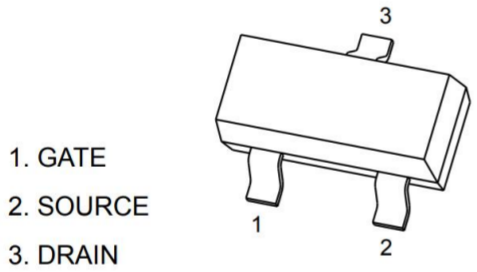
Product Summary

- V_{DS} 30 V
- I_{DS} (at V_{GS}=-10V) 4 A
- $R_{DS(ON)}$ (at V_{GS}=-10V) <51mΩ

Application

- DC/DC Converter
- Portable equipment and battery
- Load Switch

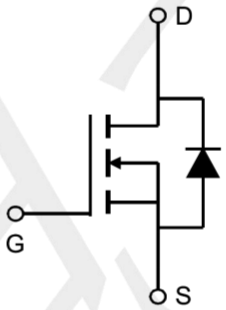
Package and Pin Configuration



1. GATE
2. SOURCE
3. DRAIN

SOT-23

Circuit diagram



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

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current	I_{DM}	15	A
Maximum Power Dissipation	P_D	1.2	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)	$R_{\theta JA}$	120	°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=250μA	BV_{DSS}	30	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS} , I_D= 250μA	$V_{GS(th)}$	0.6	0.9	1.5	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±12V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 30V, V_{GS}=0V	I_{DSS}	--	0.1	1	μA
	V_{DS}= 30V, T_J=125°C		--	10	100	μA
Drain-Source On-State Resistance (Note 1)	V_{GS}= 10V, I_D= 3.6A	R_{DS}(on)	--	40	51	mΩ
	V_{GS}= 4.5V, I_D= 2.0A		--	43	54	
	V_{GS}= 2.5V, I_D= 1.0A		--	55	69	
Forward Transconductance (Note 2)	V_{DS}= 5V, I_D= 3.6A	g_{fs}	--	--	40	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = 15V, I_D = 3.6A, V_{GS} = 10V	Q_g	--	4.4	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	0.6	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	1.4	--	
Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	390	--	pF
Output Capacitance		C_{oss}	--	55	--	
Reverse Transfer Capacitance		C_{rss}	--	41	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DS} = 15V, I_D= 3.6A, V_{GS} = 10V, R_{GEN} = 6Ω	$t_{d(on)}$	--	3.3	--	nS
Rise Time (Note 3)		t_r	--	1	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	21.7	--	
Fall Time (Note 3)		t_f	--	2.1	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_F = 3.6A	V_{SD}	--	0.85	1.5	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	4	A
Pulsed Current (Note 1)		I_{SM}	--	--	15	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)

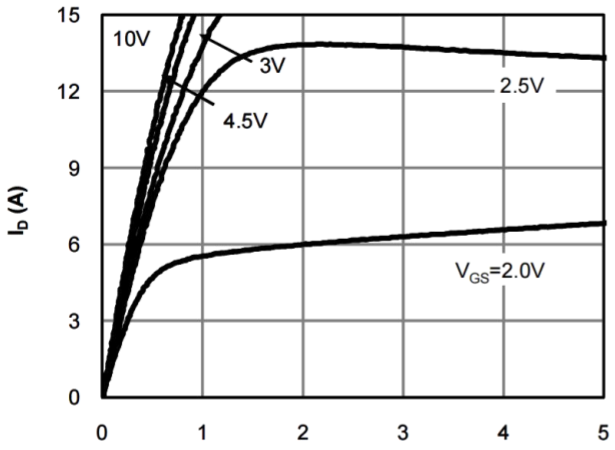


Fig 1: On-Region Characteristics (Note E)

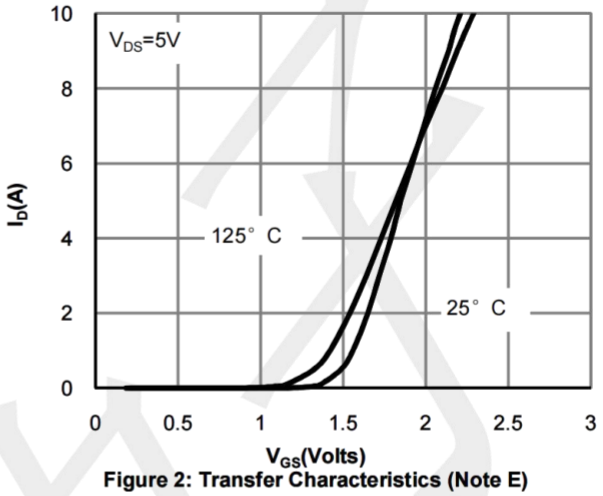


Figure 2: Transfer Characteristics (Note E)

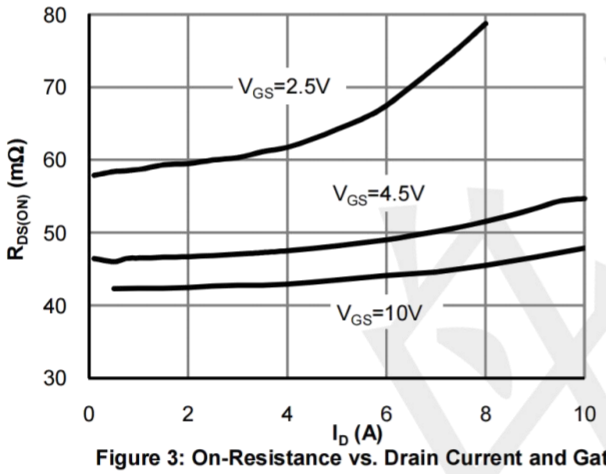


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

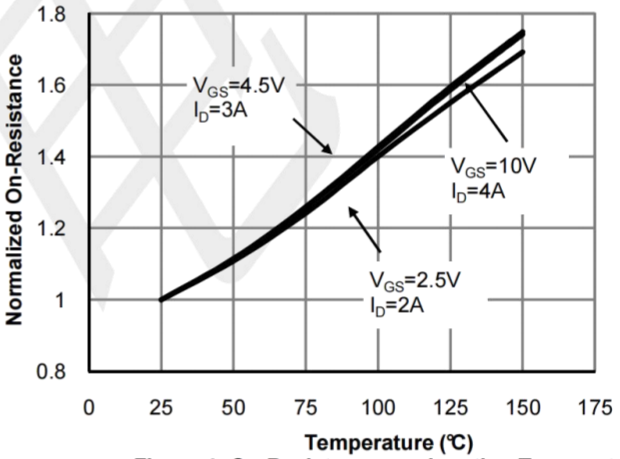


Figure 4: On-Resistance vs. Junction Temperature (Note E)

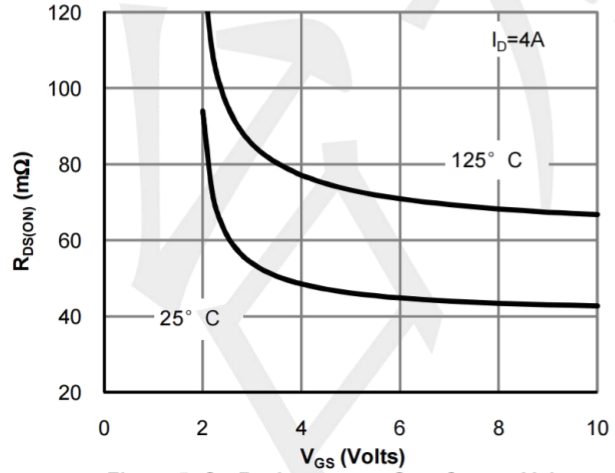


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

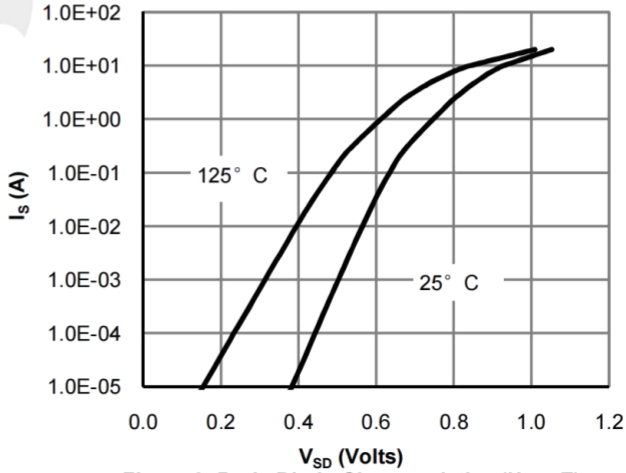
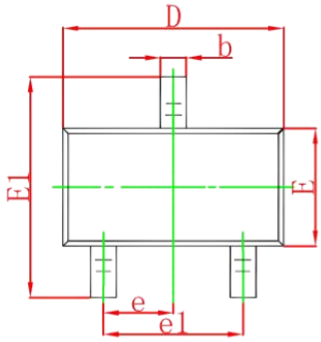
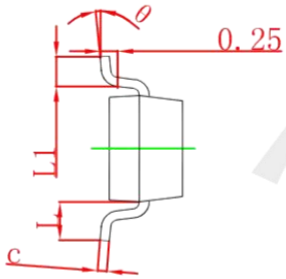
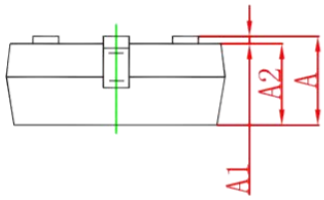


Figure 6: Body-Diode Characteristics (Note E)

Package Information SOT-23

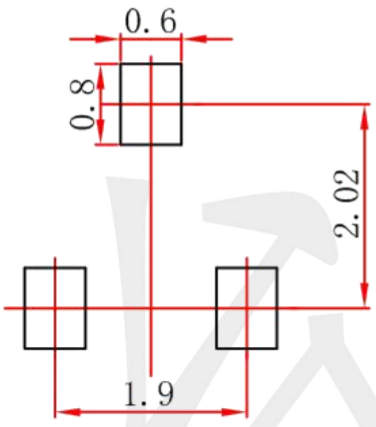






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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