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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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2N7002-HF (N-Channel)

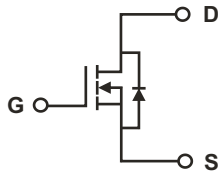
RoHS Device
Halogen Free



Features

-Power dissipation : 0.35W

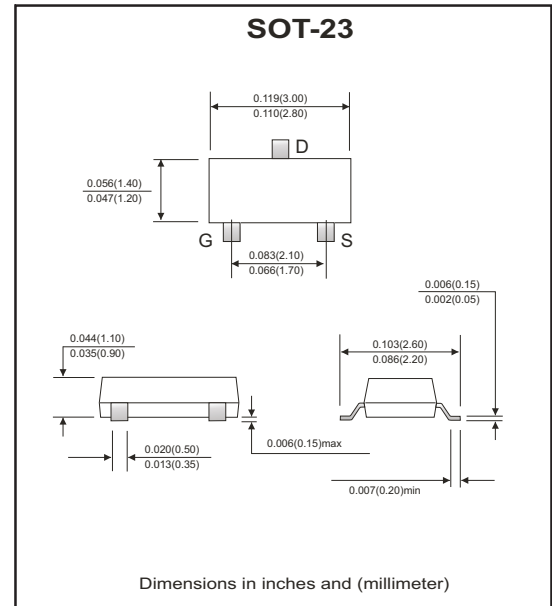
Equivalent Circuit



G : Gate
S : Source
D : Drain

Maximum Ratings (at TA=25°C)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DS}	60	V
Drain current	I_D	250	mA
Power dissipation	P_D	350	mW
Junction and storage temperature	T_J, T_{STG}	-55 ~ +150	°C



Electrical Characteristics (at TA=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source breakdown voltage	$V_{GS}=0V, I_D=10\mu A$	$V_{(BR)DSS}$	60	70		V
Gate-Threshold voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{th(GS)}$	1	1.5	2.5	
Gate-body leakage	$V_{DS}=0V, V_{GS}=15V$	I_{GSS}			10	nA
Zero gate voltage drain current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}			1	μA
	$V_{DS}=60V, V_{GS}=0V, T_J=125^\circ C$				500	
On-state drain current	$V_{GS}=10V, V_{DS}=7.5V$	$I_{D(ON)}$	800	1300		mA
	$V_{GS}=4.5V, V_{DS}=10V$		500	700		
Drain-Source on resistance	$V_{GS}=10V, I_D=250mA$	$r_{DS(ON)}$		1.5	3	Ω
	$V_{GS}=4.5V, I_D=200mA$			2.0	4	
Forward tran conductance	$V_{DS}=15V, I_D=200mA$	g_{fs}		300		mS
Diode forward voltage	$I_S=200mA, V_{GS}=0V$	V_{SD}		0.85	1.2	V
Total gate charge	$V_{DS}=30V, V_{GS}=10V, I_D=250mA$	Q_g		0.6	1.0	nC
Gate-Source charge		Q_{gs}		0.06		
Gate-Drain charge		Q_{gd}		0.06		
Input capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	C_{iss}		25		pF
Output capacitance		C_{oss}		6		
Reverse transfer capacitance		C_{rss}		1.2		
Turn-on time	$V_{DD}=30V, R_L=200\Omega$ $I_D=100mA, V_{GEN}=10V$ $R_G=10\Omega$	$t_{d(ON)}$		7.5	20	nS
		t_r		6		
Turn-off time		$t_{d(off)}$		7.5	20	

RATING AND CHARACTERISTIC CURVES (2N7002-HF)

Fig.1 On-Region Characteristics

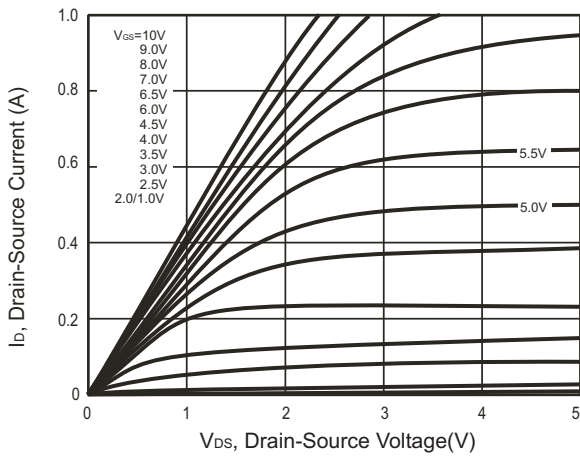


Fig.2 On-Resistance vs Drain Current

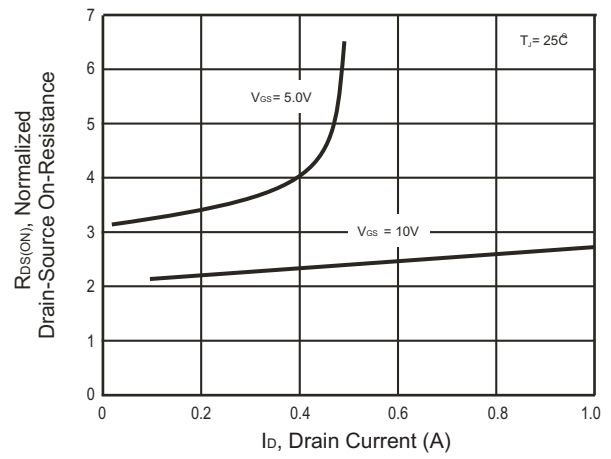


Fig.3 On-Resistance vs Junction Temperature

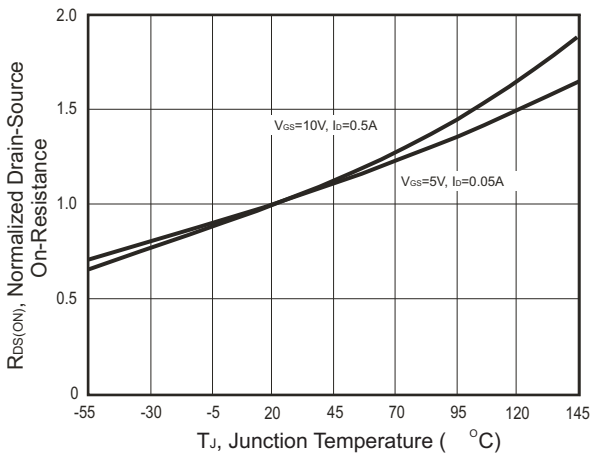
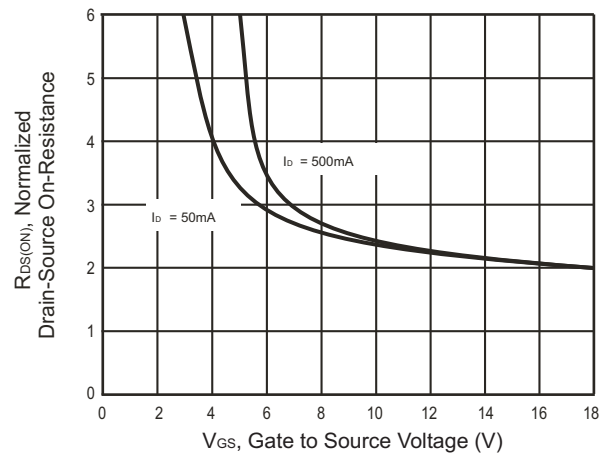
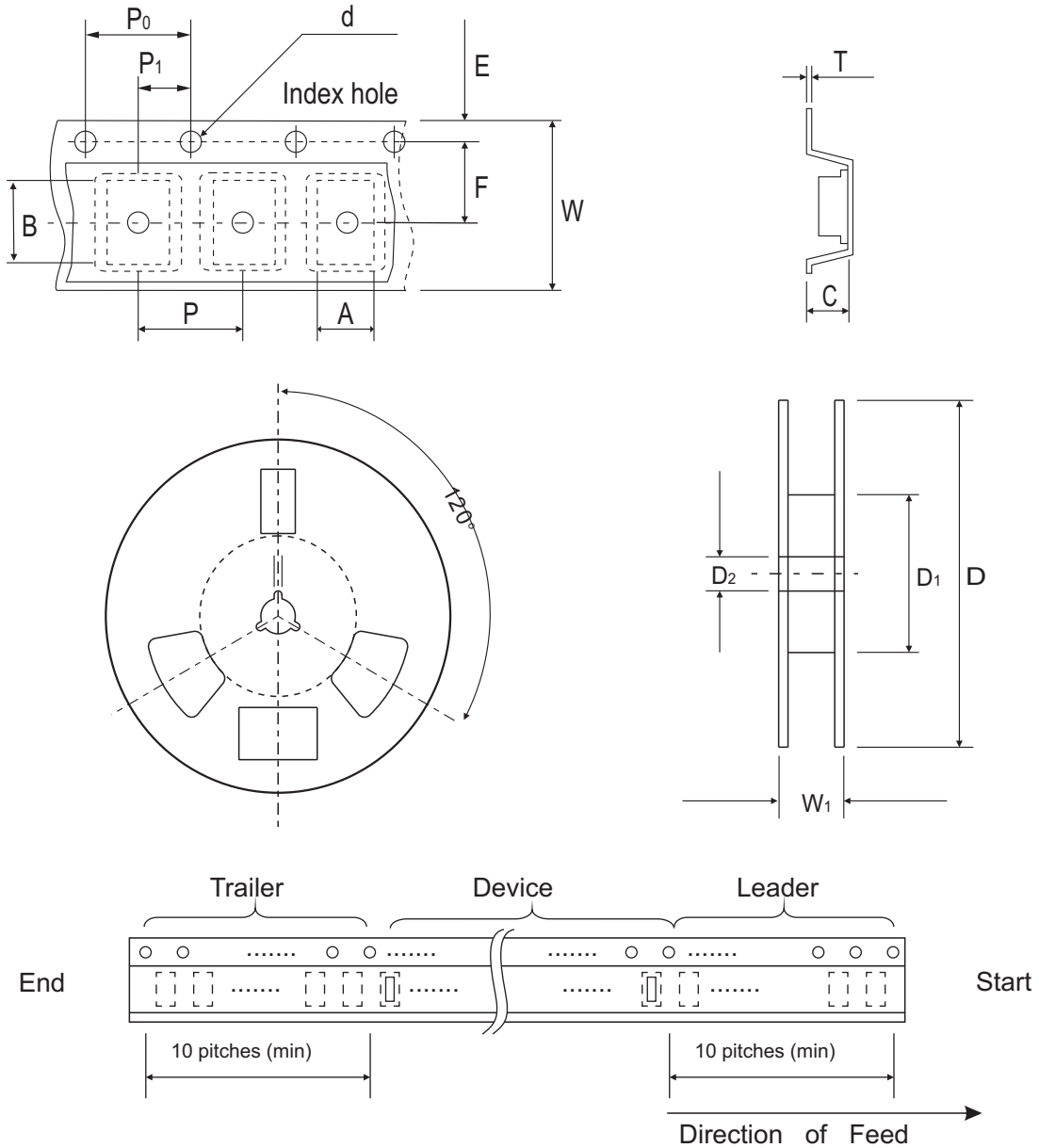


Fig.4 On-Resistance vs Gate-Source Voltage



Reel Taping Specification

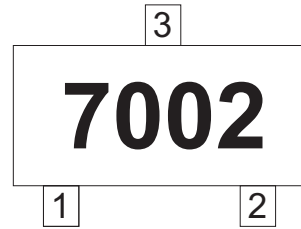


SOT-23	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	3.10 ± 0.10	2.85 ± 0.10	1.40 ± 0.10	1.55 ± 0.10	178 ± 1	50.0 MIN.	13.0 ± 0.20
	(inch)	0.122 ± 0.004	0.112 ± 0.004	0.055 ± 0.004	0.061 ± 0.004	7.008 ± 0.04	1.969 MIN.	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	P ₀	P ₁	W	W ₁
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 ± 0.30	14.4 MAX.
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 ± 0.012	0.567 MAX.

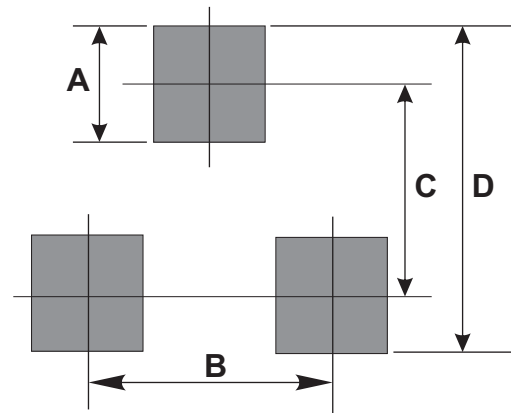
Marking Code

Part Number	Marking Code
2N7002-HF	7002



Suggested PAD Layout

SIZE	SOT-23	
	(mm)	(inch)
A	0.80	0.031
B	1.90	0.075
C	2.02	0.080
D	2.82	0.111



Standard Packaging

Case Type	Qty per Reel	Reel Size
	(Pcs)	(inch)
SOT-23	3000	7