

## 2N7002-G (N-Channel)

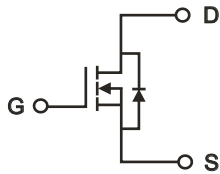
### RoHS Device



### Features

Power dissipation : 0.35W

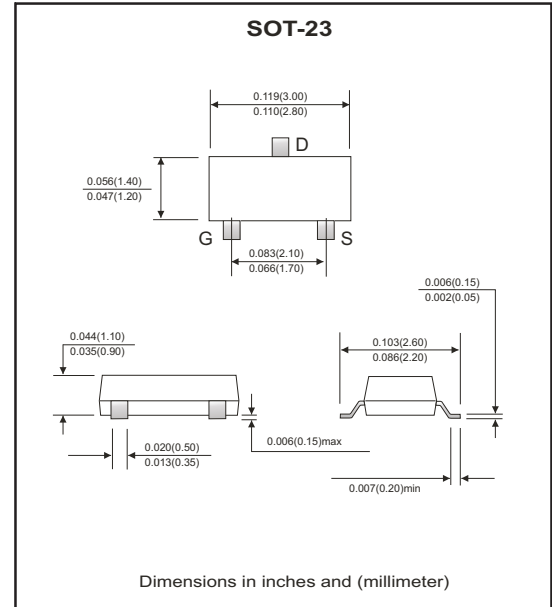
### Equivalent Circuit



G : Gate  
S : Source  
D : Drain

### Maximum Ratings (at TA=25°C)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V <sub>DS</sub>	60	V
Drain current	I <sub>D</sub>	250	mA
Power dissipation	P <sub>D</sub>	350	mW
Junction and storage temperature	T <sub>J</sub> , T <sub>STG</sub>	-55 ~ +150	°C



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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source breakdown voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =10μA	V <sub>(BR)DSS</sub>	60	70		V
Gate-Threshold voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	V <sub>th(GS)</sub>	1	1.5	2.5	
Gate-body leakage	V <sub>DS</sub> =0V, V <sub>GS</sub> =15V	I <sub>GSS</sub>			10	nA
Zero gate voltage drain current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V	I <sub>DSS</sub>			1	μA
	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C				500	
On-state drain current	V <sub>GS</sub> =10V, V <sub>DS</sub> =7.5V	I <sub>D(ON)</sub>	800	1300		mA
	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V		500	700		
Drain-Source on resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =250mA	r <sub>DS(ON)</sub>		1.5	3	Ω
	V <sub>GS</sub> =4.5V, I <sub>D</sub> =200mA			2.0	4	
Forward tran conductance	V <sub>DS</sub> =15V, I <sub>D</sub> =200mA	g <sub>fs</sub>		300		mS
Diode forward voltage	I <sub>S</sub> =200mA, V <sub>GS</sub> =0V	V <sub>SD</sub>		0.85	1.2	V
Total gate charge	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =250mA	Q <sub>g</sub>		0.6	1.0	nC
Gate-Source charge		Q <sub>gs</sub>		0.06		
Gate-Drain charge		Q <sub>gd</sub>		0.06		
Input capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	C <sub>iss</sub>		25		pF
Output capacitance		C <sub>oss</sub>		6		
Reverse transfer capacitance		C <sub>rss</sub>		1.2		
Turn-on time	V <sub>DD</sub> =30V, R <sub>L</sub> =200Ω I <sub>D</sub> =100mA, V <sub>GEN</sub> =10V R <sub>G</sub> =10Ω	t <sub>d(ON)</sub>		7.5	20	nS
		t <sub>r</sub>		6		
Turn-off time		t <sub>d(off)</sub>		7.5	20	

## RATING AND CHARACTERISTIC CURVES (2N7002-G)

Fig.1 On-Region Characteristics

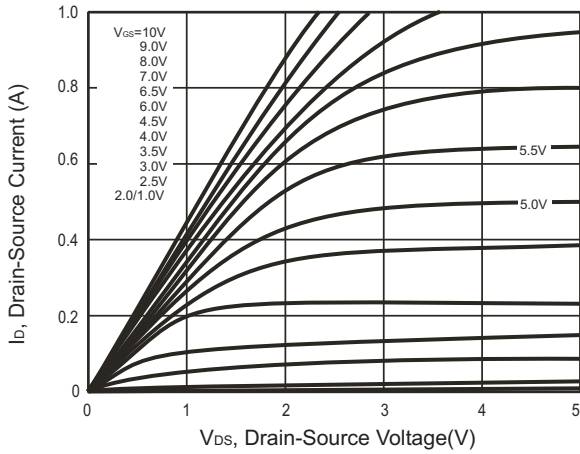


Fig.2 On-Resistance vs Drain Current

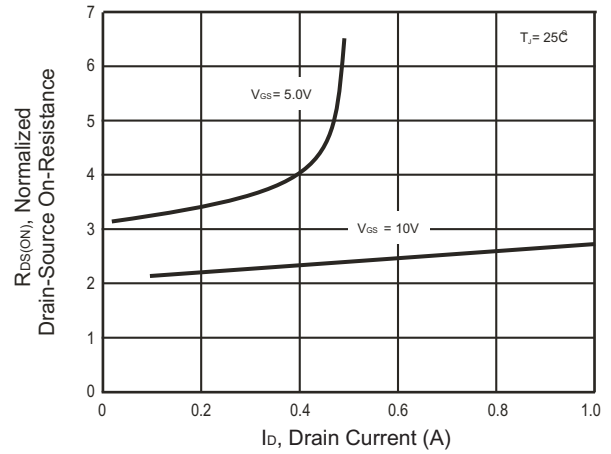


Fig.3 On-Resistance vs Junction Temperature

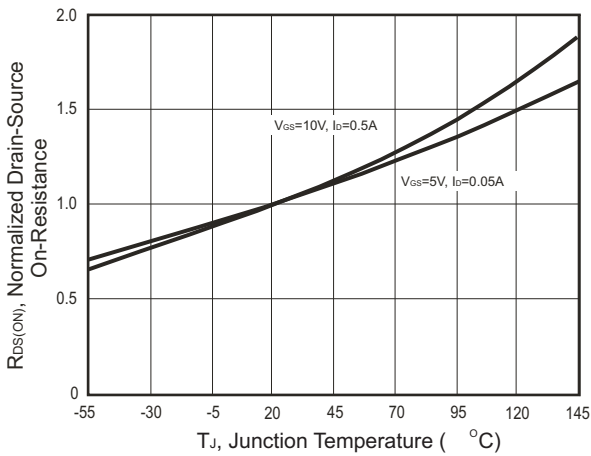
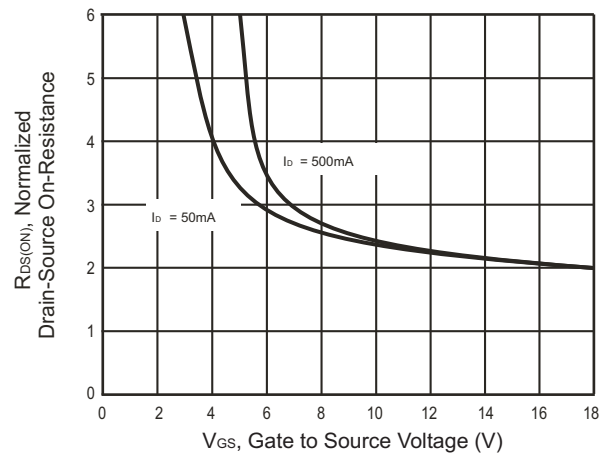
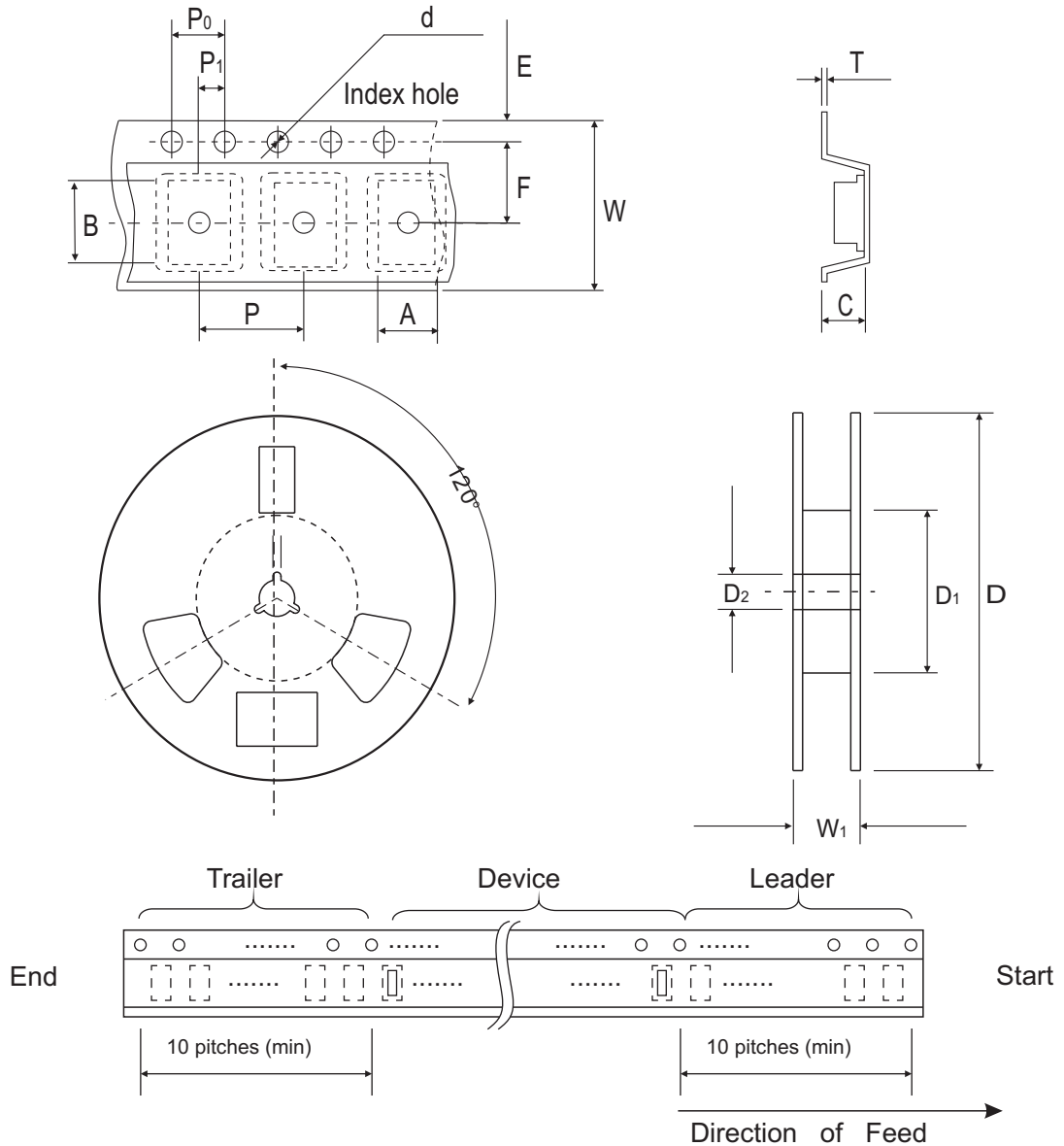


Fig.4 On-Resistance vs Gate-Source Voltage



## Reel Taping Specification

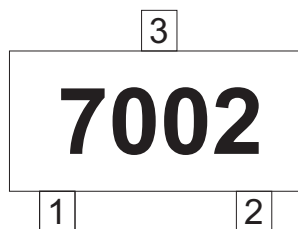


SOT-23	SYMBOL	A	B	C	d	D	D <sub>1</sub>	D <sub>2</sub>
	(mm)	3.10 ± 0.10	2.85 ± 0.10	1.40 ± 0.10	1.55 ± 0.10	178 ± 1	50.0 MIN.	13.0 ± 0.20
	(inch)	0.122 ± 0.004	0.112 ± 0.004	0.055 ± 0.004	0.061 ± 0.004	7.008 ± 0.04	1.969 MIN.	0.512 ± 0.008

SOT-23	SYMBOL	E	F	P	P <sub>0</sub>	P <sub>1</sub>	W	W <sub>1</sub>
	(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.

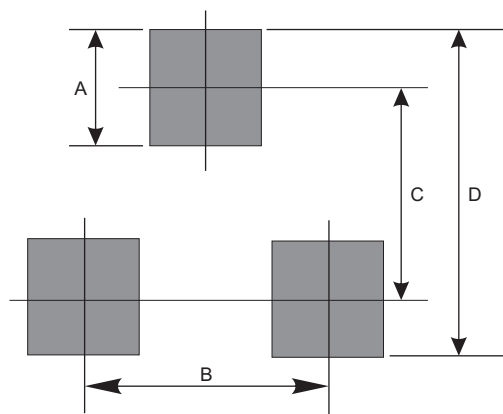
## Marking Code

Part Number	Marking Code
2N7002-G	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 Package

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