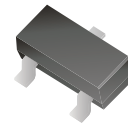


# CJ1012-G

## N-Channel

### RoHS Device



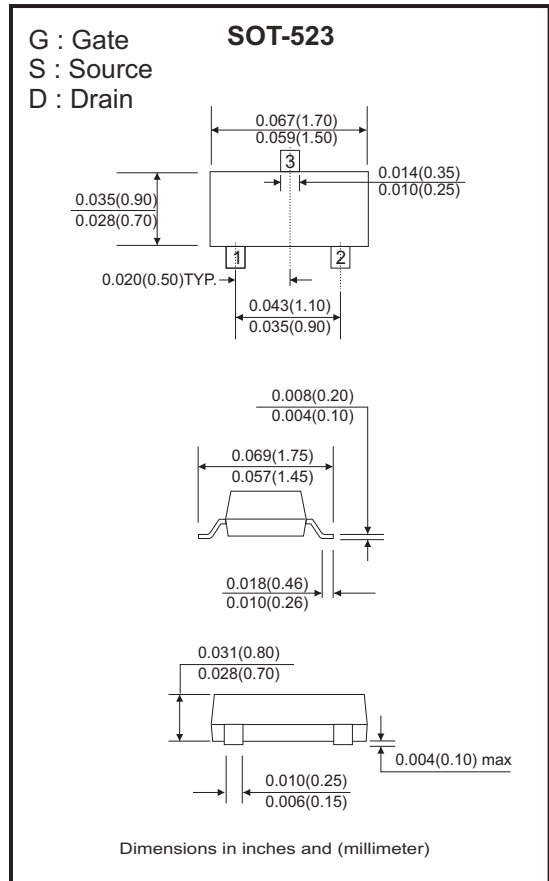
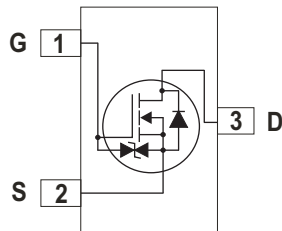
### Features

- High-Side Switching.
- Low On-Resistance.
- Low Threshold.
- Fast Switching Speed.
- ESD protected up to 2KV.

### Mechanical data

- Case: SOT-323, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.

### Circuit Diagram



### Maximum Rating (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V <sub>DSS</sub>	20	V
Gate-source voltage	V <sub>GS</sub>	±12	V
Drain current-continuous	I <sub>D(DC)</sub>	500	mA
Drain Current-pulsed (note1)	I <sub>DM(pulse)</sub>	1000	mA
Power dissipation (note2, T <sub>A</sub> =25°C)	P <sub>D</sub>	150	mW
Max. Power dissipation (note3, T <sub>C</sub> =25°C)		275	
Thermal resistance from junction to ambient	R <sub>θJA</sub>	833	°C/W
Thermal resistance from junction to case	R <sub>θJC</sub>	455	°C/W
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>STG</sub>	-55 to +150	°C

## Electrical Characteristics (at T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>On/Off States</b>						
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	V <sub>GS</sub> =0V , I <sub>D</sub> =250μA	20			V
Gate-threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.45		1.2	V
Gate-body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V , V <sub>GS</sub> =±4.5V			±1	μA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =16V , V <sub>GS</sub> =0V			100	nA
Drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V , I <sub>D</sub> =600mA			700	mΩ
		V <sub>GS</sub> =2.5V , I <sub>D</sub> =500mA			850	
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V , I <sub>D</sub> =400mA		1		S
<b>Dynamic Characteristics</b>						
Input capacitance (note 4)	C <sub>iss</sub>	V <sub>DS</sub> =16V , V <sub>GS</sub> =0V, f=1MHz		100		pF
Output capacitance (note 4)	C <sub>oss</sub>			16		
Reverse transfer capacitance (note 4)	C <sub>rss</sub>			12		
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =10V , V <sub>GS</sub> =4.5V, I <sub>D</sub> =250mA		750		nC
Gate-source charge	Q <sub>gs</sub>			75		
Gate-drain charge	Q <sub>gd</sub>			225		
<b>Switching Times (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V , I <sub>D</sub> =200mA R <sub>L</sub> =47Ω , V <sub>GS</sub> =4.5V , R <sub>G</sub> =10Ω		5		nS
Rise time	t <sub>r</sub>			5		
Turn-off delay time	t <sub>d(off)</sub>			25		
Fall time	t <sub>f</sub>			11		
<b>Drain-source diode characteristics</b>						
Drain-source diode forward voltage (note 5)	V <sub>SD</sub>	I <sub>S</sub> =0.15A , V <sub>GS</sub> =0V			1.2	V

### Notes:

1. Repetitive rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at T<sub>a</sub>=25°C.
3. This test is performed with infinite heat sink at T<sub>c</sub>=25°C.
4. These parameters have no way to verify.
5. Pulse test: Pulse width ≤300μs, Duty cycle ≤0.5%.

RATING AND CHARACTERISTIC CURVES (CJ1012-G)

Fig.1 - Output Characteristics

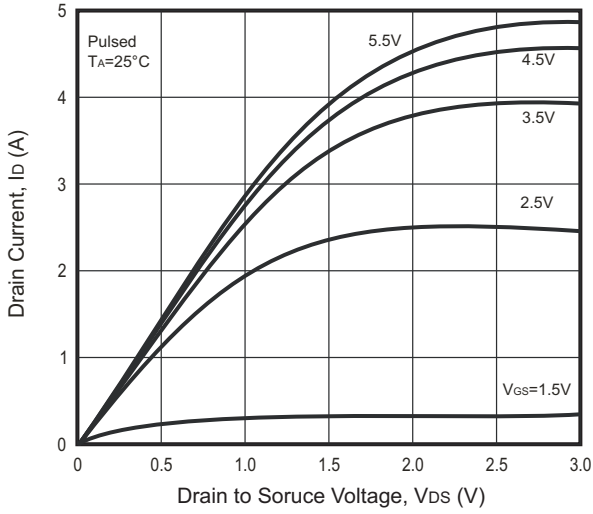


Fig.2 - Transfer Characteristics

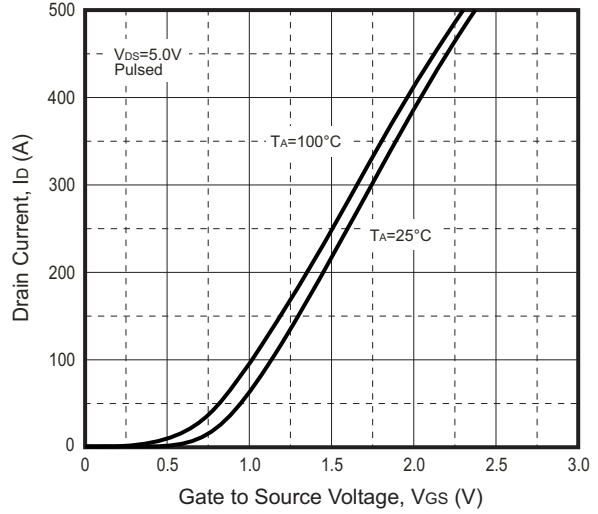


Fig.3 -  $R_{DS(ON)}$  —  $I_D$

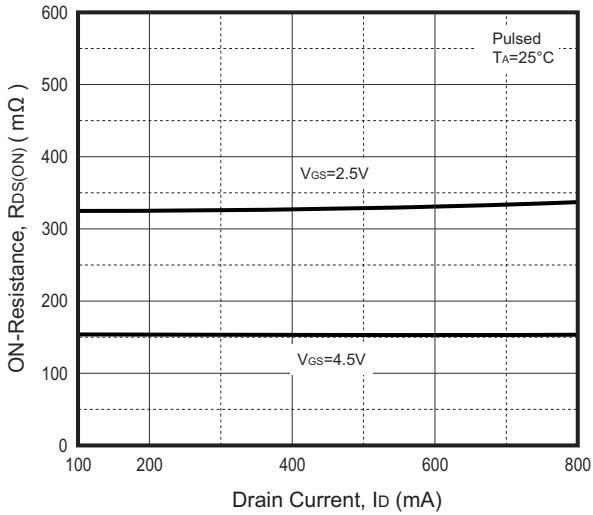


Fig.4 -  $R_{DS(ON)}$  —  $V_{GS}$

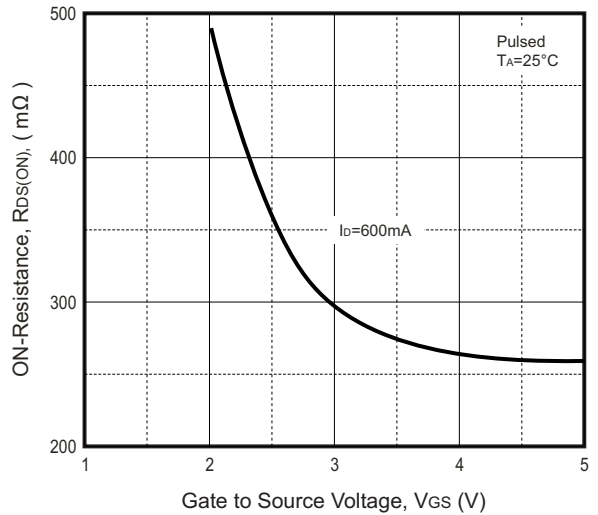


Fig.5 -  $I_S$  —  $V_{SD}$

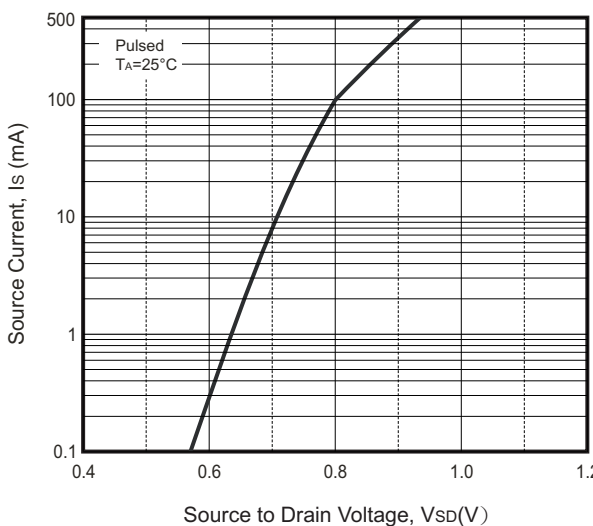
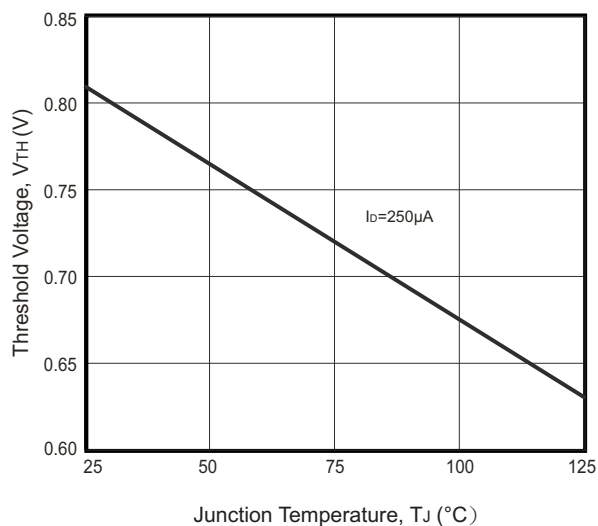
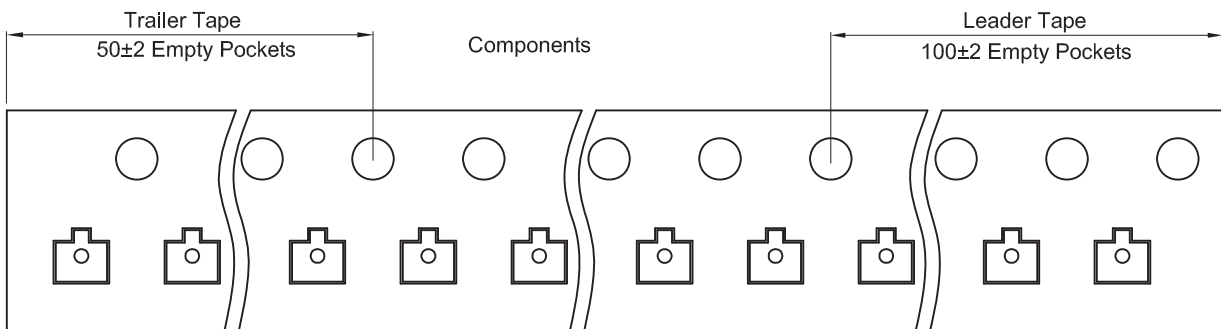
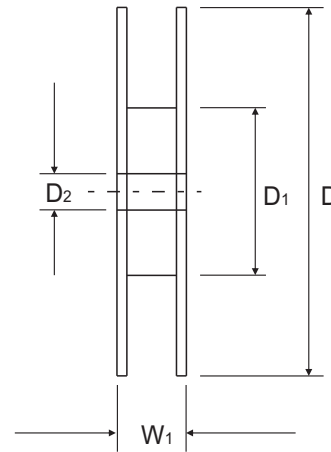
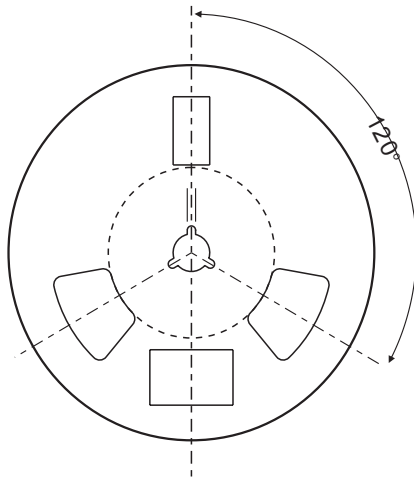
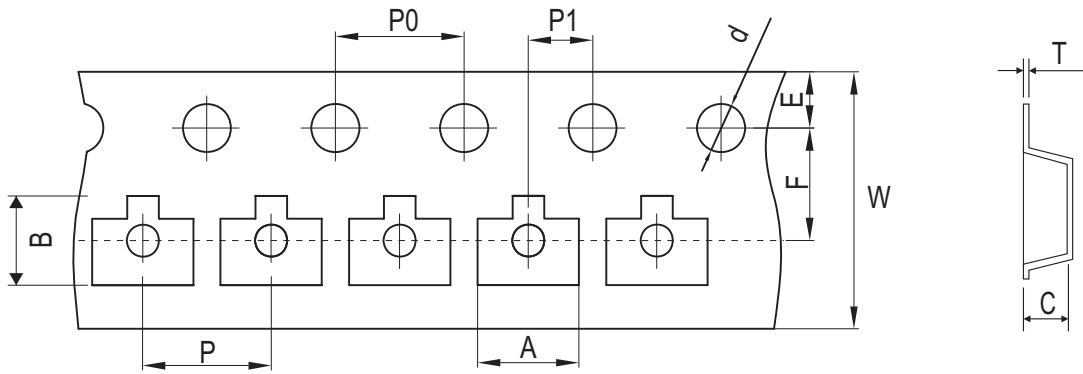


Fig.6 - Threshold Voltage



Company reserves the right to improve product design, functions and reliability without notice.

Reel Taping Specification



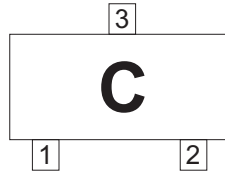
SOT-523	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	1.85 ± 0.05	1.85 ± 0.05	0.875 ± 0.05	1.50 ± 0.10	178 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.073 ± 0.002	0.073 ± 0.002	0.034 ± 0.002	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-523	SYMBOL	E	F	P	P0	P1	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 / - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 / - 0.004	0.484 ± 0.039

Company reserves the right to improve product design , functions and reliability without notice.

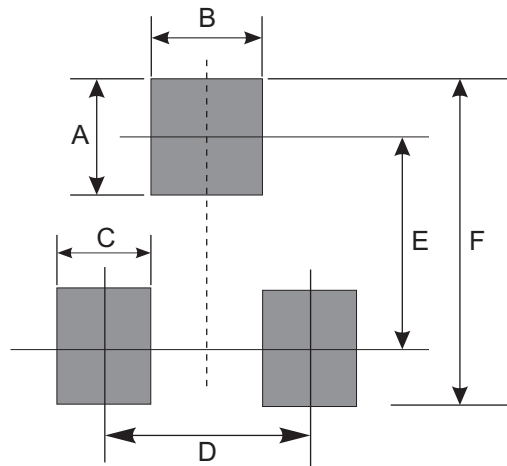
## Marking Code

Part Number	Marking Code
CJ1012-G	C



## Suggested PAD Layout

SIZE	SOT-523	
	(mm)	(inch)
A	0.60	0.024
B	0.50	0.020
C	0.40	0.016
D	1.00	0.039
E	1.24	0.049
F	1.84	0.072



## Standard Packaging

Case Type	REEL PACK	
	REEL ( pcs )	Reel Size (inch)
SOT-523	3,000	7