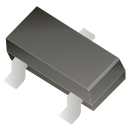
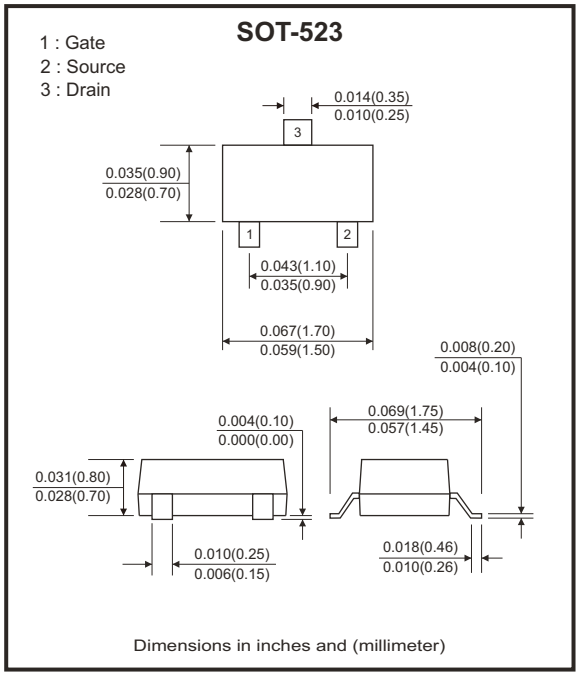
CJ1012-HF

N-Channel
RoHS Device
Halogen Free



Features

- High-side switching.
- Low on-resistance.
- Low threshold.
- Fast switching speed.
- ESD protected.

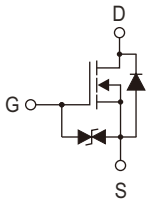


Mechanical data

- Case: SOT-523, molded plastic.

Circuit Diagram

G : Gate
S : Source
D : Drain



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	20	V
Gate-source voltage	V_{GS}	±12	V
Drain current-continuous	$I_{D(DC)}$	500	mA
Drain Current-pulsed (Note 1)	$I_{DM(pulse)}$	1000	mA
Power dissipation (Note 2, T_A=25°C)	P_D	150	mW
Maximum power dissipation (Note 3, T_C=25°C)		275	
Thermal resistance from junction to ambient	$R_{\theta JA}$	833	°C/W
Thermal resistance from junction to case	$R_{\theta JC}$	455	°C/W
Junction temperature	T_J	150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
On/Off States						
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D = 250μA	20			V
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.45	0.8	1.2	V
Gate-body leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±4.5V			±1	μA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 600mA		250	700	mΩ
		V_{GS} = 2.5V, I_D = 500mA		330	850	
Forward transconductance	g_{FS}	V_{DS} = 10V, I_D = 400mA		1		S
Dynamic Characteristics						
Input capacitance (Note 4)	C_{iss}	V_{DS} = 16V, V_{GS} = 0V, f = 1MHz		100		pF
Output capacitance (Note 4)	C_{oss}			16		
Reverse transfer capacitance (Note 4)	C_{rss}			12		
Total gate charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 250mA		750		nC
Gate-source charge	Q_{gs}			75		
Gate-drain charge	Q_{gd}			225		
Switching Times (Note 4)						
Turn-on delay time	$t_{d(on)}$	V_{DD} = 10V, R_L = 47Ω, I_D = 200mA, V_{GS} = 4.5V, R_G = 10Ω		5		nS
Rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			25		
Fall time	t_f			11		
Drain-source diode characteristics						
Drain-source diode forward voltage (Note 5)	V_{SD}	I_S = 0.15A, V_{GS} = 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 Ta=25°C.
3. This test is performed with infinite heat sink at Tc=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-HF)

Fig.1 - Output Characteristics

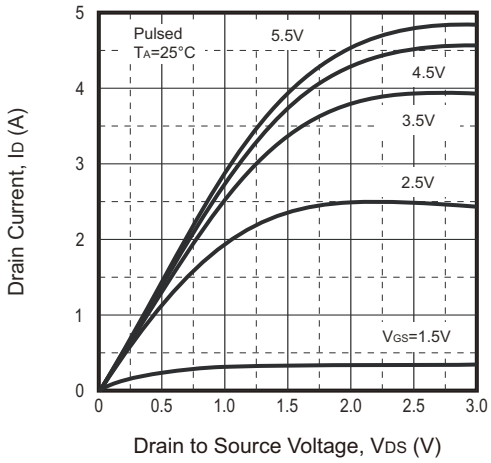


Fig.2 - Transfer Characteristics

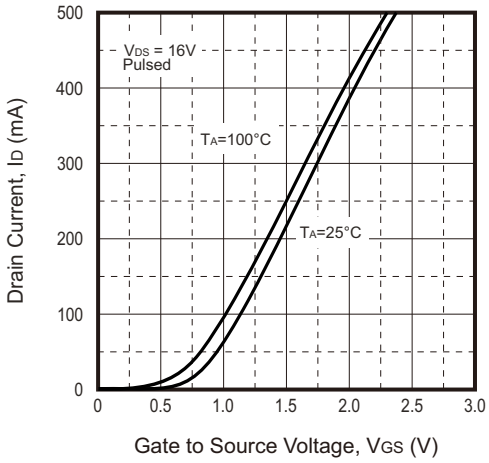


Fig.3 - $R_{DS(ON)}$ — I_D

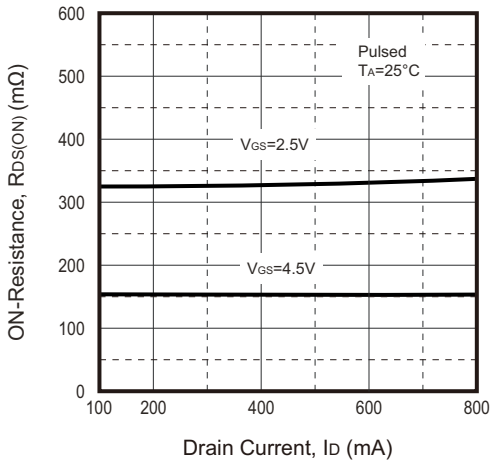


Fig.4 - $R_{DS(ON)}$ — V_{GS}

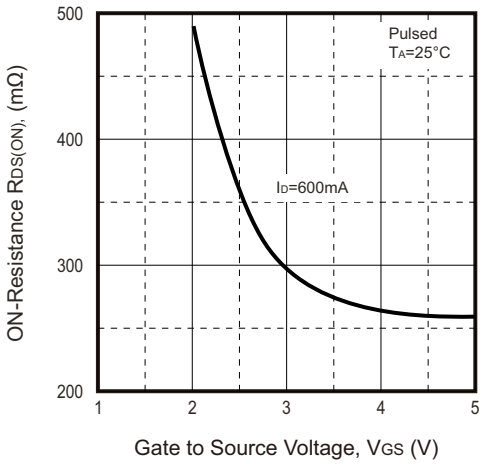


Fig.5 - I_S — V_{SD}

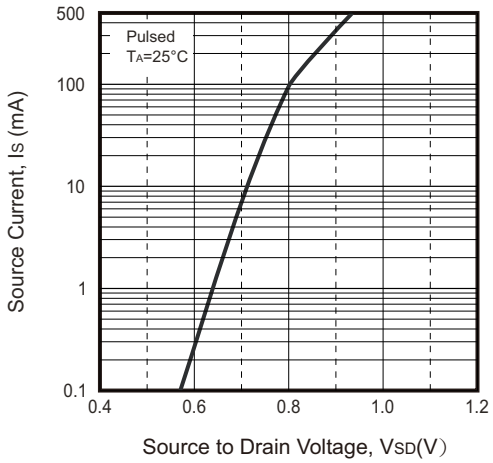
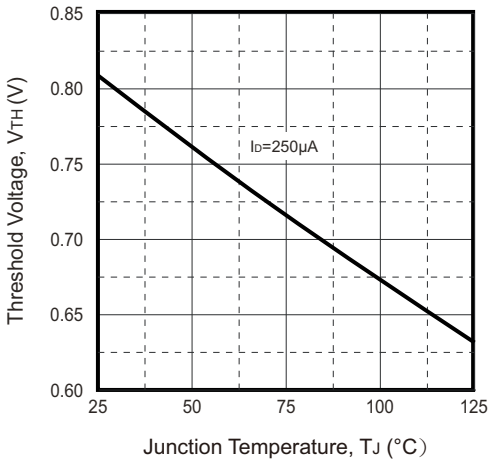
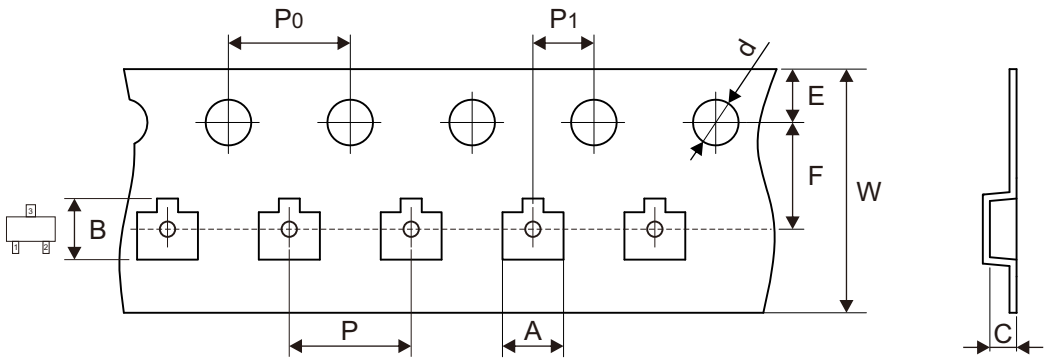
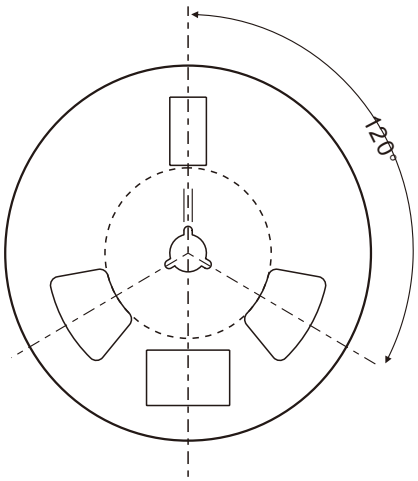


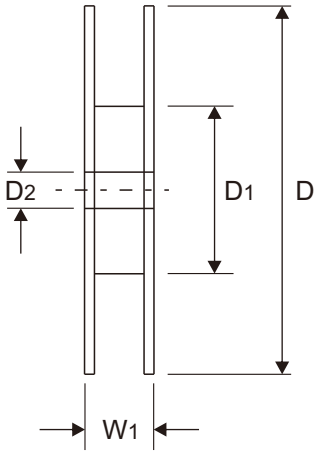
Fig.6 - Threshold Voltage

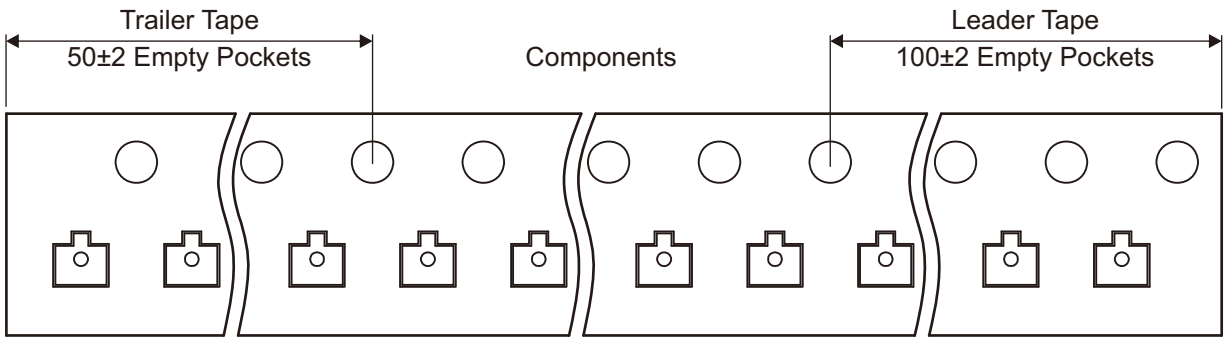


Reel Taping Specification







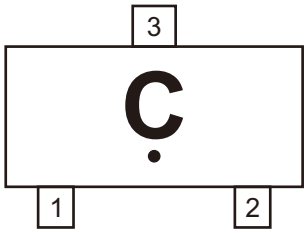


	SYMBOL	A	B	C	d	D	D_1	D_2
SOT-523	(mm)	1.85 ± 0.05	1.85 ± 0.05	0.875 ± 0.05	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.073 ± 0.002	0.073 ± 0.002	0.034 ± 0.002	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P_0	P_1	W	W_1
SOT-523	(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

Marking Code

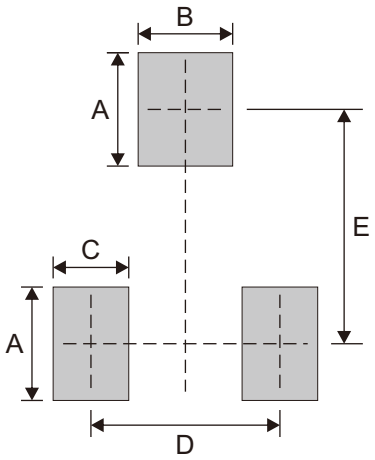
Part Number	Marking Code
CJ1012-HF	C



Solid dot = Halogen Free

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



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

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