

## SOT-323 Plastic-Encapsulate MOSFETS

CJW1012 N-Channel Power MOSFET

### GENERAL DESCRIPTION

This Single N-Channel MOSFET has been designed using advanced Power Trench process to optimize the  $R_{DS(ON)}$ .

### FEATURE

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

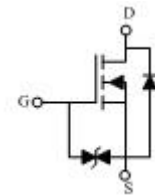
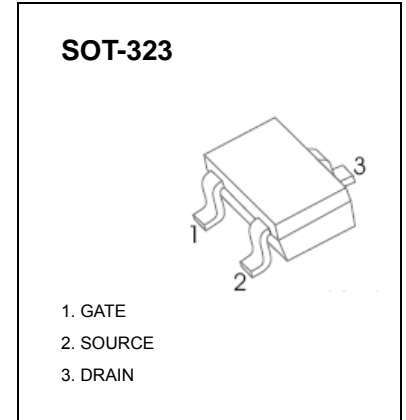
### APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

### MARKING: C

Maximum ratings ( $T_a=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Drain Current-Continuous	$I_{D(DC)}$	500	mA
Drain Current -Pulsed(note1)	$I_{DM(pulse)}$	1000	
Power Dissipation (note 2 , $T_a=25^\circ\text{C}$ )	$P_D$	150	mW
Maximum Power Dissipation (note 3 , $T_c=25^\circ\text{C}$ )		275	
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	455	
Storage Temperature	$T_j$	150	$^\circ\text{C}$
Junction Temperature	$T_{stg}$	-55 ~+150	



Electrical characteristics ( $T_a=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>On/Off States</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45		1.2	
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 4.5V$			$\pm 1$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 600mA$			700	m $\Omega$
		$V_{GS} = 2.5V, I_D = 500mA$			850	
Forward Transconductance	$g_{FS}$	$V_{DS} = 10V, I_D = 400mA$		1		S
<b>Dynamic Characteristics</b>						
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		
<b>Switching Times (note 4)</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V,$ $R_L = 47\Omega, I_D = 200mA,$ $V_{GS} = 4.5V, R_G = 10\Omega$		5		nS
Rise Time	$t_r$			5		
Turn-Off Delay Time	$t_{d(off)}$			25		
Fall Time	$t_f$			11		
<b>Drain-Source Diode Characteristics</b>						
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  $T_a=25^\circ\text{C}$ .
3. This test is performed with infinite heat sink at  $T_c=25^\circ\text{C}$ .
4. These parameters have no way to verify.
5. Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$ .

