



Micro Commercial Components



Micro Commercial Components
20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

Features

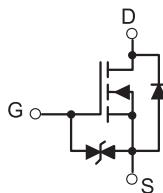
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Low Threshold
- ESD Protected Gate
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

Maximum Ratings

- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C

Parameter	Symbol	Value	Unit
Drain-Source-Voltage	V_{DSS}	20	V
Gate-Source-Voltage	V_{GSS}	± 12	V
Continuous Drain Current Pulsed Drain Current (note1)	$I_{D(DC)}$ $I_{D(M(pulse))}$	0.5 1.0	A
Thermal Resistance	R_{thJA} R_{thJC}	833 455	°C/W
Power Dissipation (note2, $T_a=25^\circ\text{C}$) Maximum Power Dissipation (note3, $T_c=25^\circ\text{C}$)	P_D	150 275	mW

Equivalent circuit

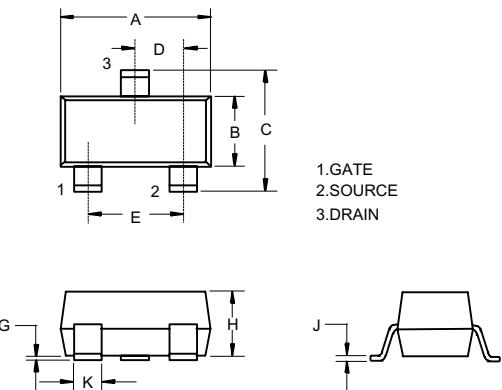


Marking: C

SI1012

N-Channel Plastic-Encapsulate Transistor

SOT-523



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.059	.067	1.50	1.70	
B	.030	.033	0.75	0.85	
C	.057	.069	1.45	1.75	
D	.020 Nominal		0.50 Nominal		
E	.035	.043	0.90	1.10	
G	.000	.004	0.00	.100	
H	.028	.031	.70	0.80	
J	.004	.008	.100	.200	
K	.010	.014	.25	.35	

www.mccsemi.com

SI1012

MOSFET ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

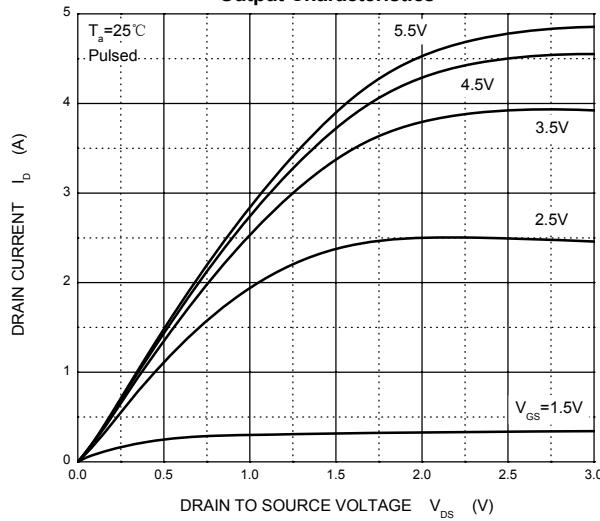
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.45	0.8	1.2	
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±4.5V			±1	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			100	nA
Drain-Source On-State Resistance	R _{DSS(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:

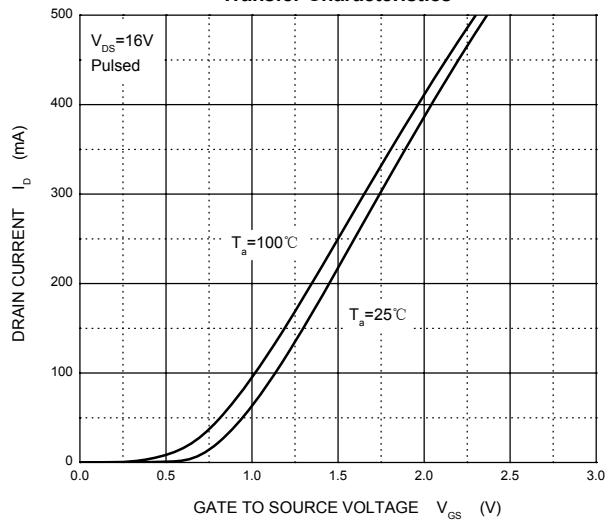
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at T_a=25°C.
3. This test is performed with infinite heat sink at T_c=25°C.
4. These parameters have no way to verify.
5. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.

SI1012

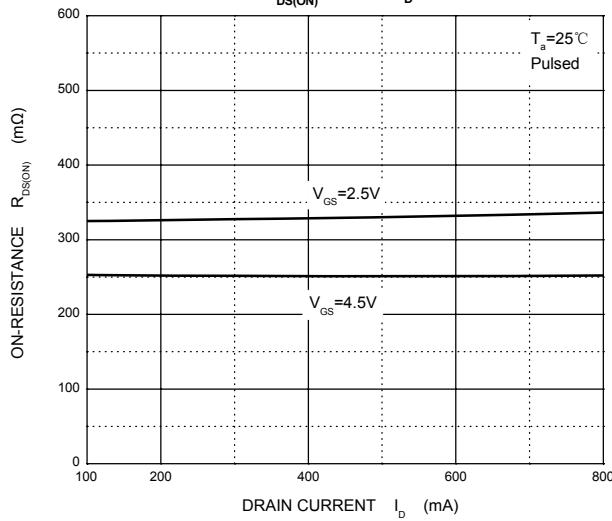
Output Characteristics



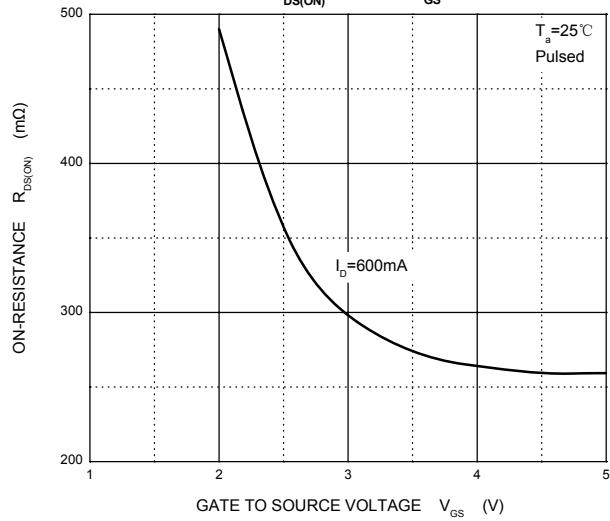
Transfer Characteristics



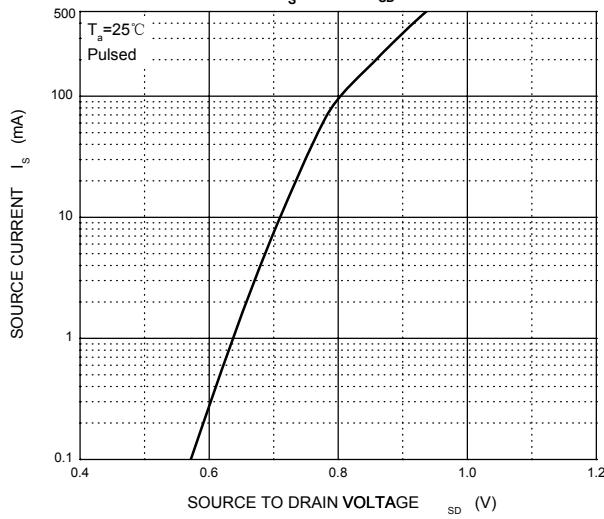
$R_{DS(ON)}$ — I_D



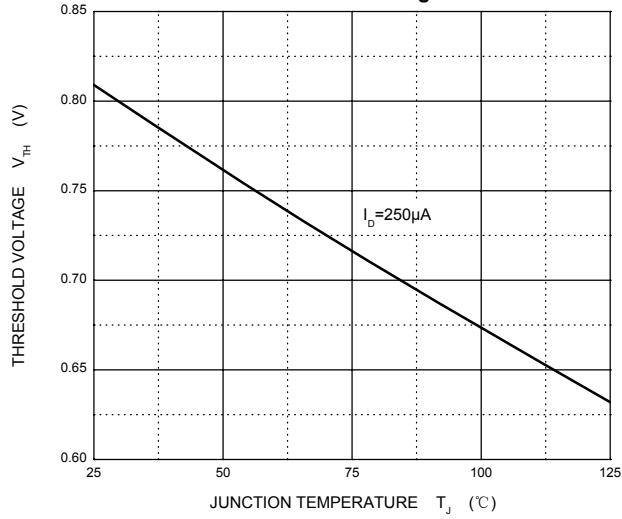
$R_{DS(ON)}$ — V_{GS}



I_s — V_{SD}



Threshold Voltage





Micro Commercial Components

Ordering Information :

Device	Packing
(Part Number)-TP	Tape&Reel:3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

IMPORTANT NOTICE

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp.** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp.** and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

CUSTOMER AWARENESS

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.