



Micro Commercial Components



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SI1012

Features

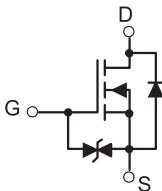
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Low Threshold
- ESD Protected Gate
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

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	$I_{D(DC)}$	0.5	A
Pulsed Drain Current (note1)	$I_{DM(pulse)}$	1.0	A
Thermal Resistance	R_{thJA} R_{thJC}	833 455	°C/W
Power Dissipation (note2, $T_a=25^\circ\text{C}$)	P_D	150	mW
Maximum Power Dissipation (note3, $T_c=25^\circ\text{C}$)		275	

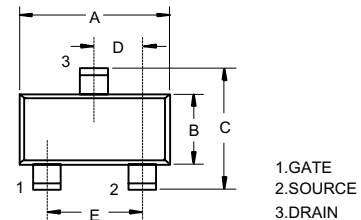
Equivalent circuit



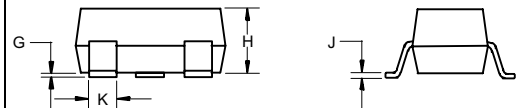
Marking: C

N-Channel Plastic-Encapsulate Transistor

SOT-523



- 1.GATE
- 2.SOURCE
- 3.DRAIN



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		0.50Nominal		
E	.035	.043	0.90	1.10	
G	.000	.004	.000	.100	
H	.028	.031	.70	0.80	
J	.004	.008	.100	.200	
K	.010	.014	.25	.35	

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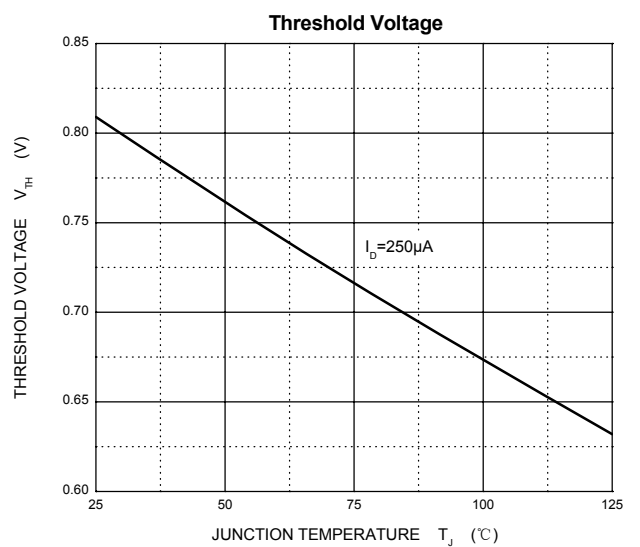
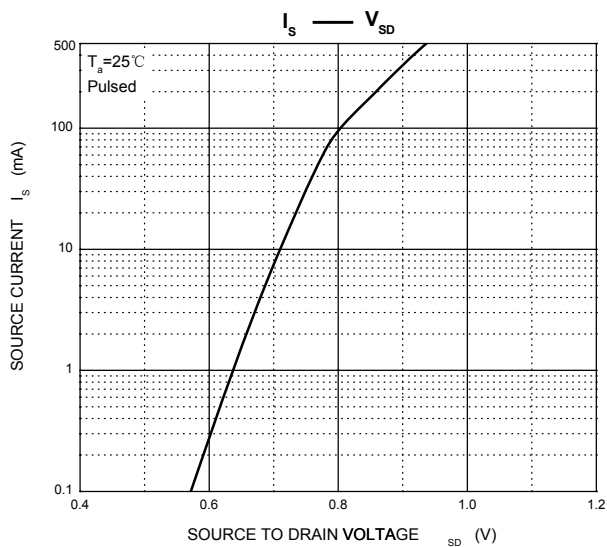
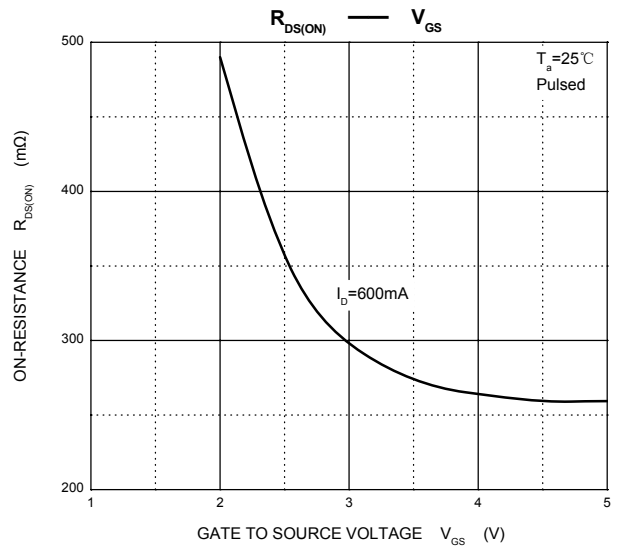
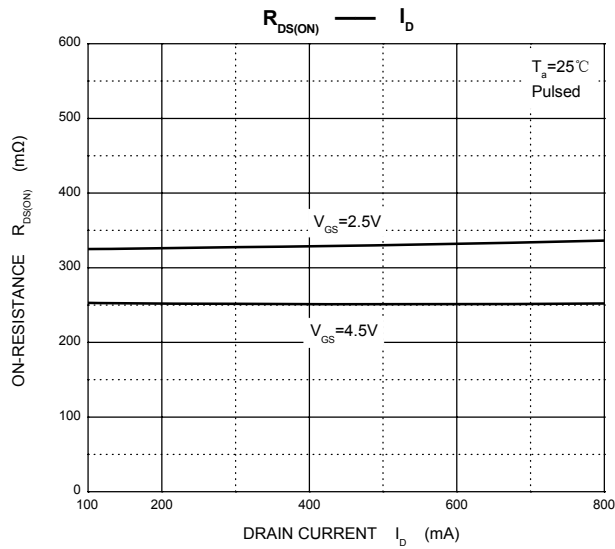
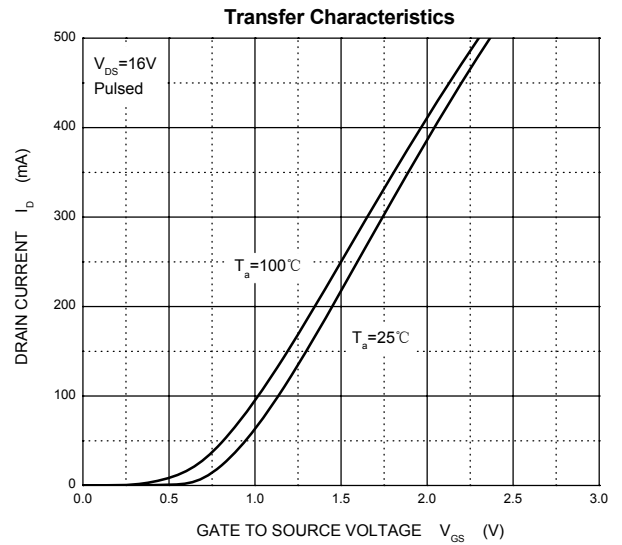
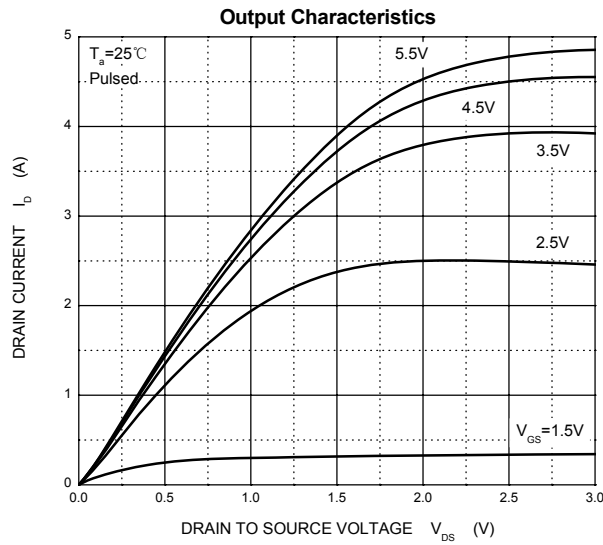
MOSFET ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45	0.8	1.2	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 4.5V$			± 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	m Ω
		$V_{GS} = 2.5V, I_D = 500mA$		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	$t_{d(on)}$	$V_{DD} = 10V, R_L = 47\Omega, I_D = 200mA, V_{GS} = 4.5V, R_G = 10\Omega$		5		nS
Rise Time	t_r			5		
Turn-Off Delay Time	$t_{d(off)}$			25		
Fall Time	t_f			11		
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 $T_a = 25^\circ C$.
3. This test is performed with infinite heat sink at $T_c = 25^\circ C$.
4. These parameters have no way to verify.
5. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

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Ordering Information :

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

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

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