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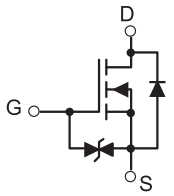
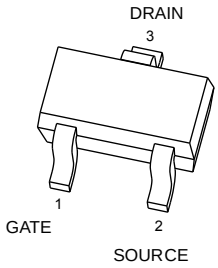
MT1012 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
20V	700mΩ@4.5V	500mA
	850mΩ@2.5V	





SOT-23

FEATURE

- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed
- ESD protected

APPLICATIONS

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

Marking : A2

Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±10	
Drain Current-Continuous	$I_{D(DC)}$	500	mA
Drain Current -Pulsed(note1)	$I_{DM(pulse)}$	1000	
Power Dissipation (note 2 , T_a=25℃)	P_D	150	mW
Maximum Power Dissipation (note 3 , T_c=25℃)		275	
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	455	
Storage Temperature	T_j	150	℃
Junction Temperature	T_{stg}	-55 ~+150	

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T_a=25℃ 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	$R_{DS(on)}$	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 T_a=25℃.
3. This test is performed with infinite heat sink at T_c=25℃.
4. These parameters have no way to verify.
5. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.

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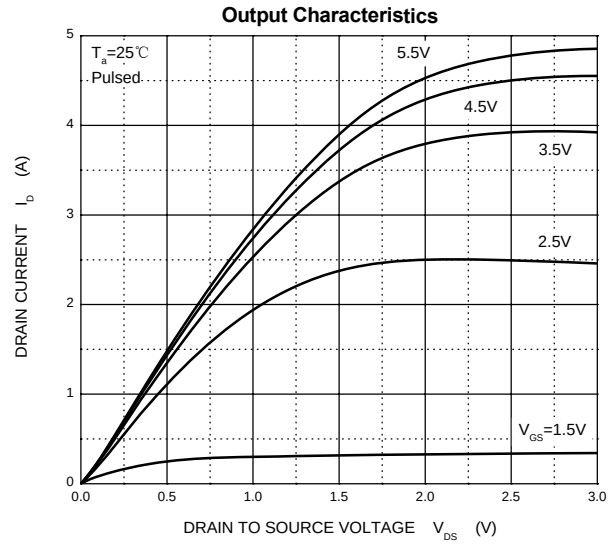
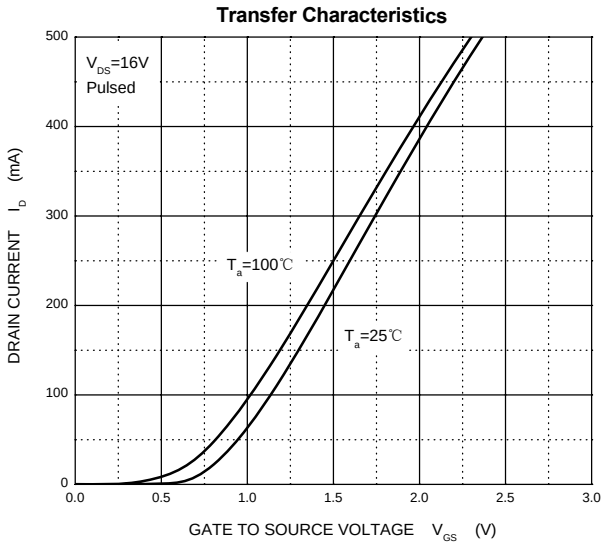
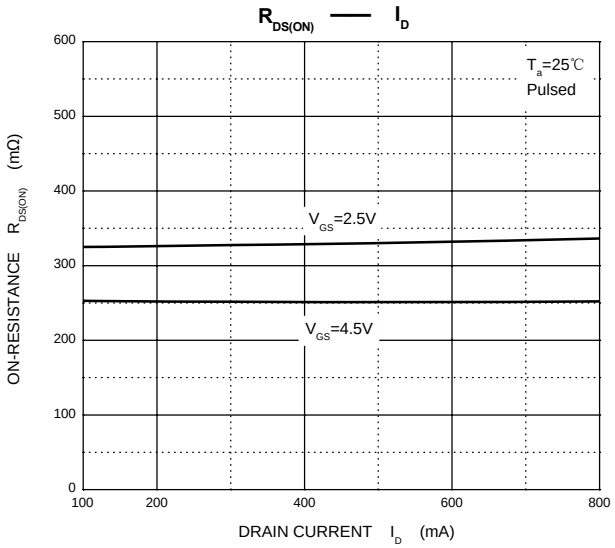
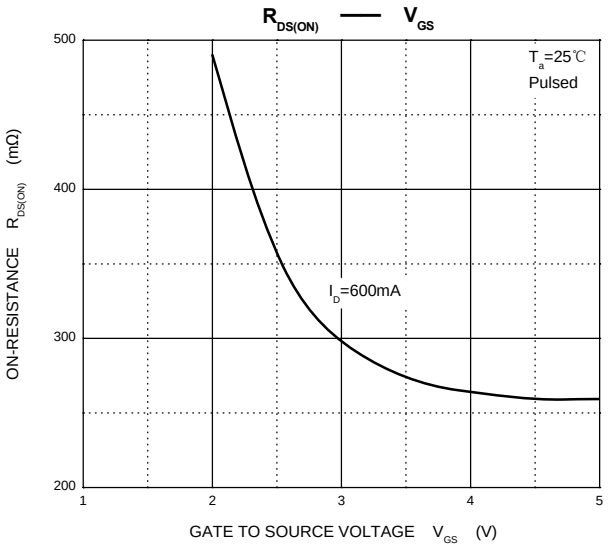
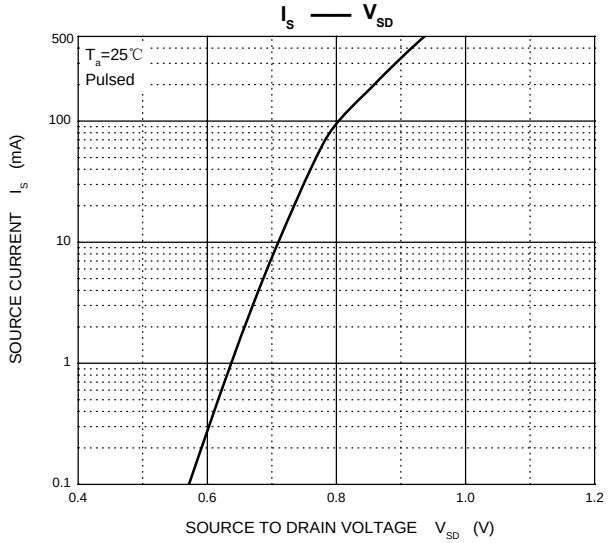
Typical Characteristics

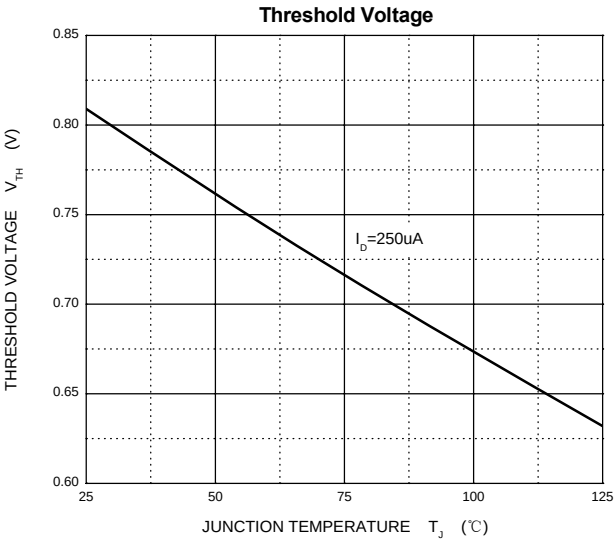












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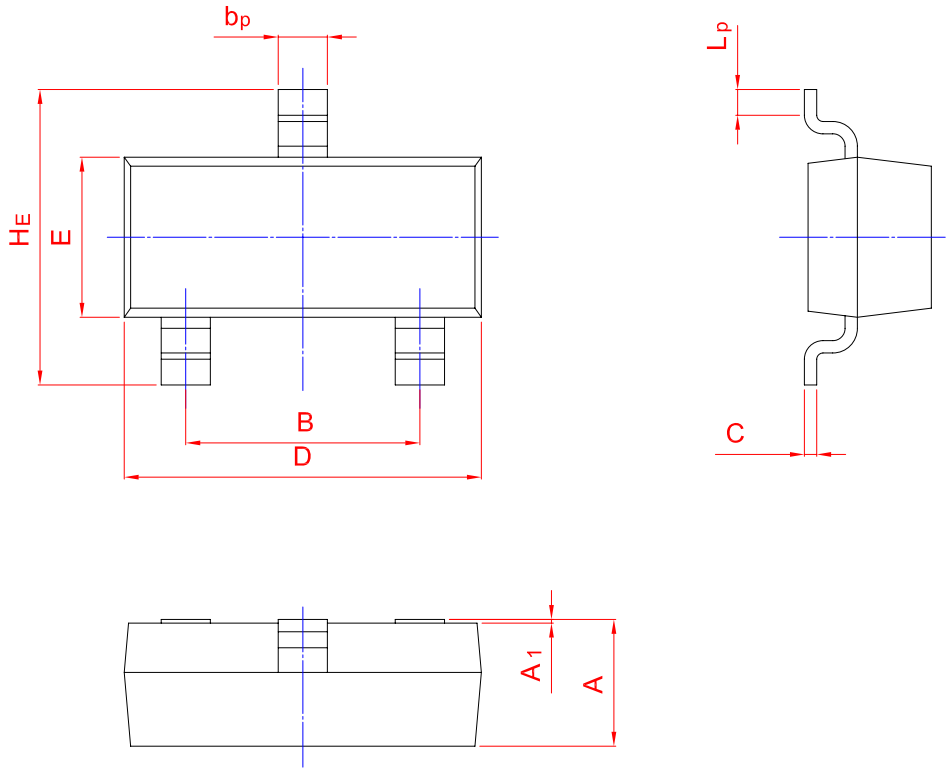
PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20