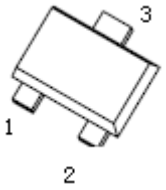
P-Channel MOSFET

SOT-523

$V_{(BR)DSS}$	$R_{DS(on)}$ MAX	I_D
- 20V	520mΩ@- 4.5V	- 0.66A
	700mΩ@- 2.5V	
	950mΩ@- 1.8V	



1. GATE
2. SOURCE
3. DRAIN

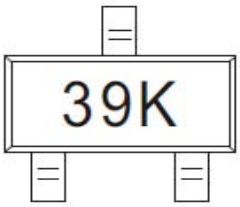
FEATURE

- Lead Free Product is Acquired
- Surface Mount Package
- P- Channel Switch with Low R_{DS}(on)
- Operated at Low Logic Level Gate Drive

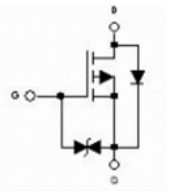
APPLICATION

- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

MARKING



Equivalent Circuit



Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain- Source Voltage	V_{DS}	- 20	V
Typical Gate- Source Voltage	V_{GS}	± 12	V
Continuous Drain Current (note 1)	I_D	- 0.66	A
Pulsed Drain Current (t_p=10 μ s)	I_{DM}	- 1.2	A
Power Dissipation (note 1)	P_D	150	mW
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	833	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	- 55~+150	℃
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	℃

MOS-FET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

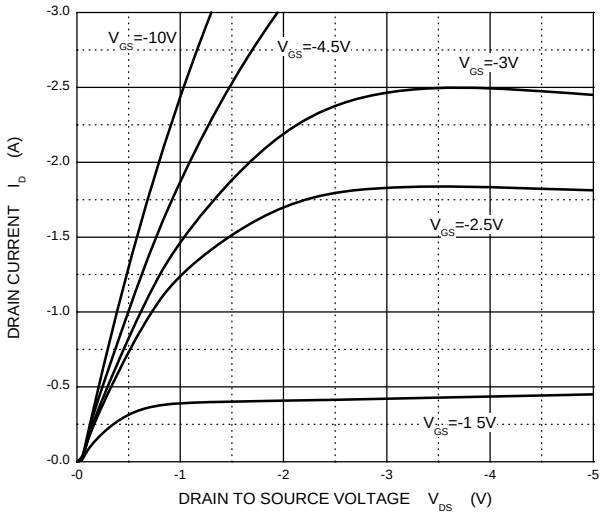
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			20	μA
Gate threshold voltage (note 2)	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.35		-1.1	V
Drain-source on-resistance (note 2)	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -1A			520	mΩ
		V_{GS} = -2.5V, I_D = -0.8A			700	mΩ
		V_{GS} = -1.8V, I_D = -0.5A			950	mΩ
Forward transconductance (note 2)	g_{FS}	V_{DS} = -10V, I_D = -0.54A		1.2		S
Diode forward voltage	V_{SD}	I_S = -0.5A, V_{GS} = 0V			-1.2	V
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitane	C_{iss}	V_{DS} = -16V, V_{GS} = 0V, f = 1MHz		113	170	pF
Output capacitance	C_{oss}			15	25	pF
Reverse transfer capacitance	C_{rss}			9	15	pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time (note 3)	$t_{d(on)}$	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -200mA, R_{GEN} = 10Ω		9		ns
Turn-on rise time (note 3)	t_r			5.8		ns
Turn-off delay time (note3)	$t_{d(off)}$			32.7		ns
Turn-off fall time (note 3)	t_f			20.3		ns

Notes :

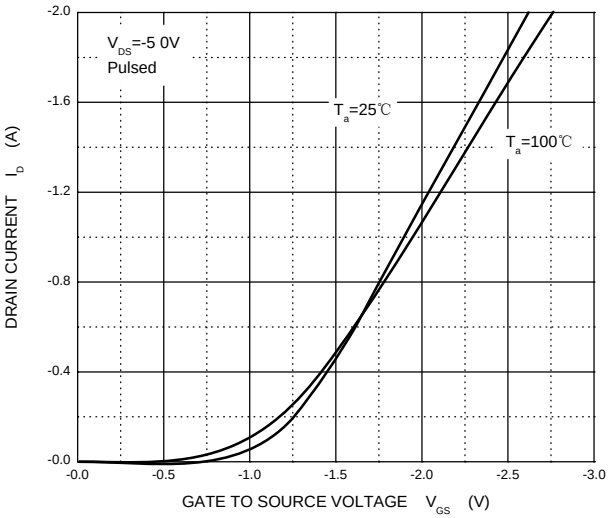
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test :Pulse Width=300μs, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

Typical Characteristics

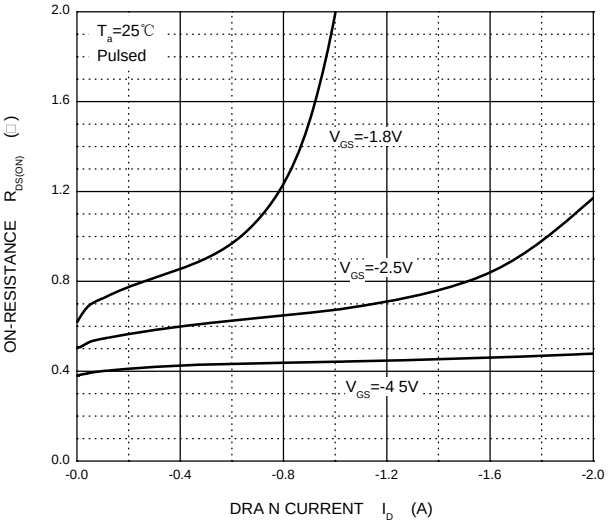
Output Characteristics



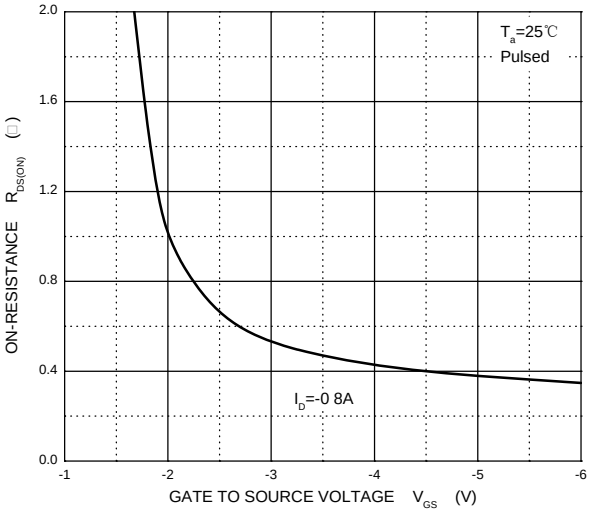
Transfer Characteristics



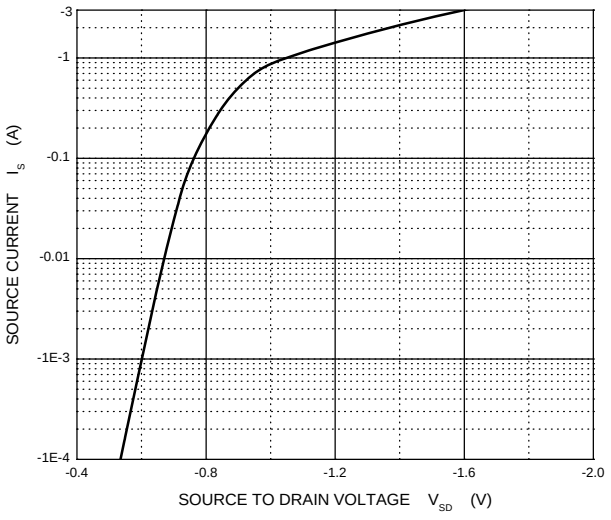
$R_{DS(ON)}$ —— I_D



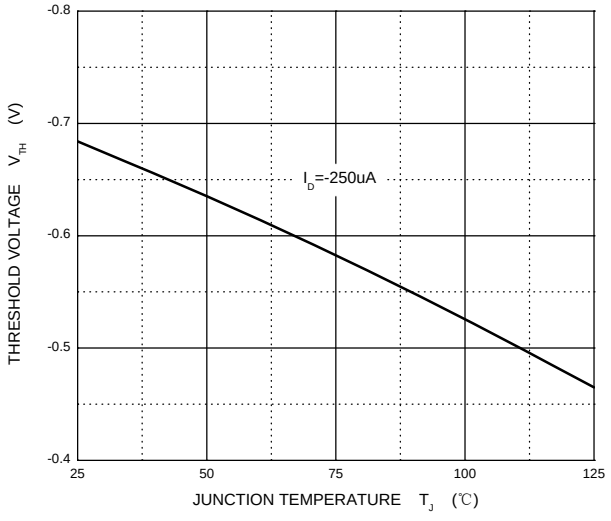
$R_{DS(ON)}$ —— V_{GS}



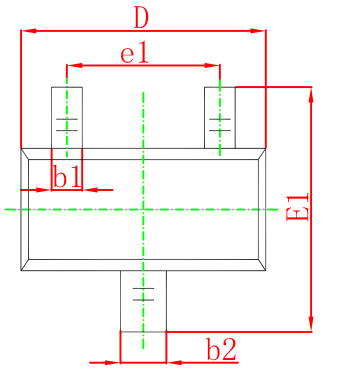
I_S —— V_{SD}

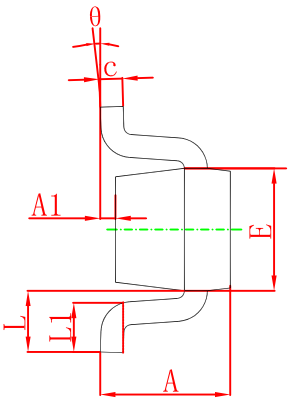


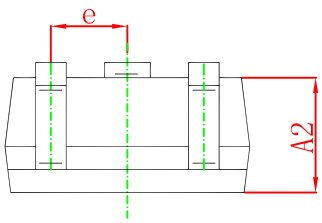
Threshold Voltage



SOT-523 Package Outline Dimensions

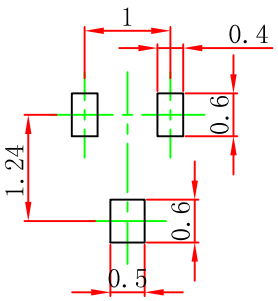






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0 900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0 500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-523 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.