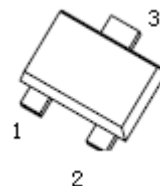


# N- Channel MOSFET

**SOT- 723**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
20V	380m $\Omega$ @ 4.5V	0.75A
	450m $\Omega$ @ 2.5V	
	800m $\Omega$ @ 1.8V	



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

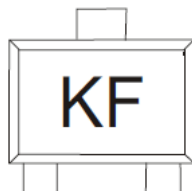
**FEATURES**

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

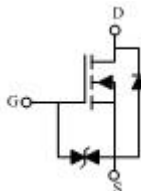
**APPLICATION**

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

**MARKING**



**Equivalent Circuit**



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

Parameter	Symbol	Value	Unit
Drain- Source Voltage	$V_{DS}$	20	V
Gate- Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current (note 1)	$I_D$	0.75	A
Pulsed Drain Current ( $t_p=10 \mu s$ )	$I_{DM}$	1.8	A
Power Dissipation (note 1)	$P_D$	150	mW
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	833	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	- 55~ 150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^{\circ}C$



## MOS-FET ELECTRICAL CHARACTERISTICS

T<sub>a</sub>=25°C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
<b>STATIC CHARACTERISTICS</b>							
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V	
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V			1	μA	
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±50	μA	
Gate threshold voltage(note 2)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = 250μA	0.35		1.1	V	
Drain-source on-resistance (note 2)	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> =0.65A			380	mΩ	
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 0.55A			450	mΩ	
		V <sub>GS</sub> = 1.8V, I <sub>D</sub> =0.45A			800	mΩ	
Forward transconductance(note 2)	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.8A		1.6		S	
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =0.15A, V <sub>GS</sub> = 0V			1.2	V	
<b>DYNAMIC CHARACTERISTICS (note 4)</b>							
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 16V, V <sub>GS</sub> =0V, f=1MHz		79	120	pF	
Output capacitance	C <sub>oss</sub>			13	20	pF	
Reverse transfer capacitance	C <sub>rss</sub>			9	15	pF	
<b>SWITCHING CHARACTERISTICS (note 4)</b>							
Turn-on delay time (note 3)	t <sub>d(on)</sub>	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 500mA, R <sub>GEN</sub> =10Ω		6.7		ns	
Turn-on rise time (note 3)	t <sub>r</sub>			4.8		ns	
Turn-off delay time (note3)	t <sub>d(off)</sub>				17.3		ns
Turn-off fall time (note 3)	t <sub>f</sub>				7.4		ns

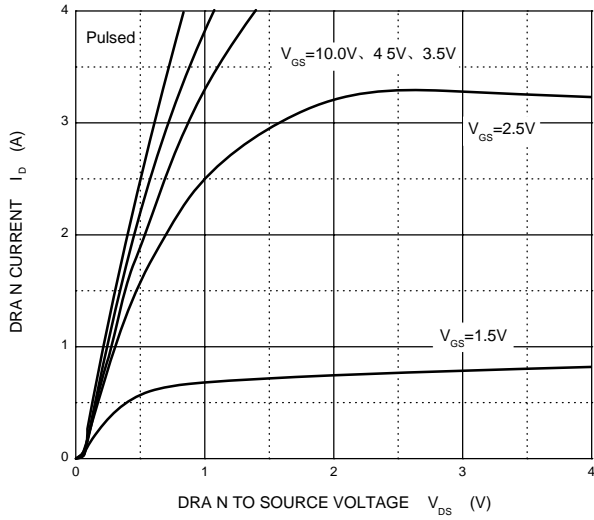
### Notes :

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 producing.

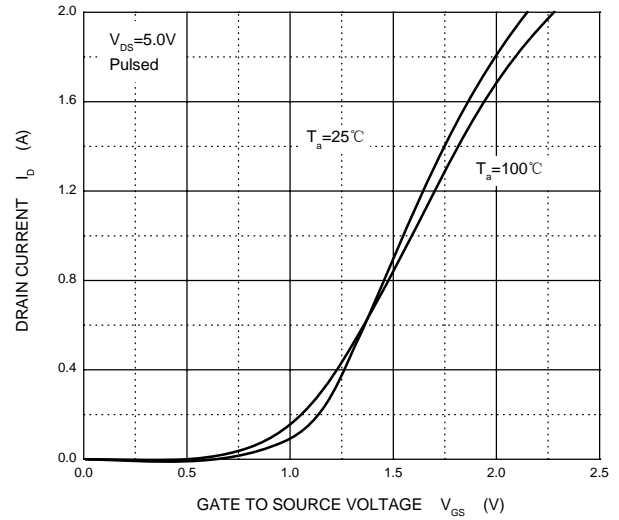


# Typical Characteristics

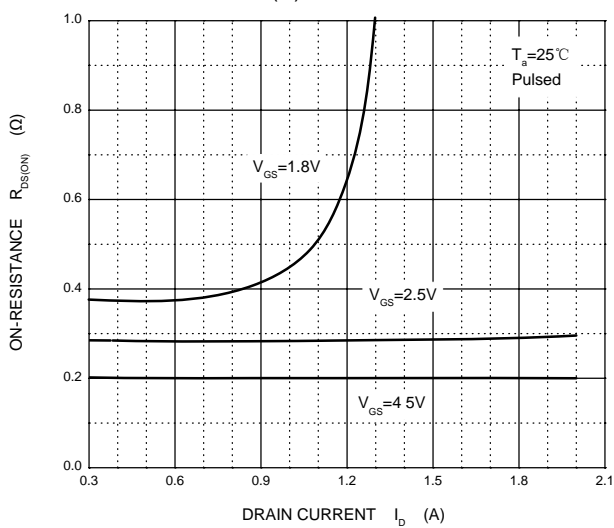
Output Characteristics



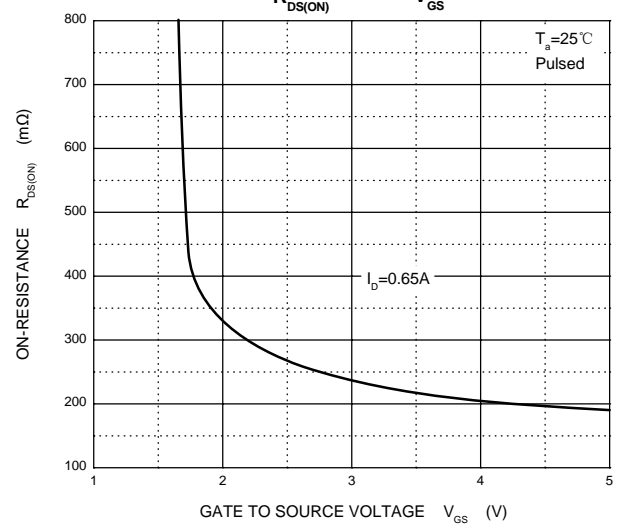
Transfer Characteristics



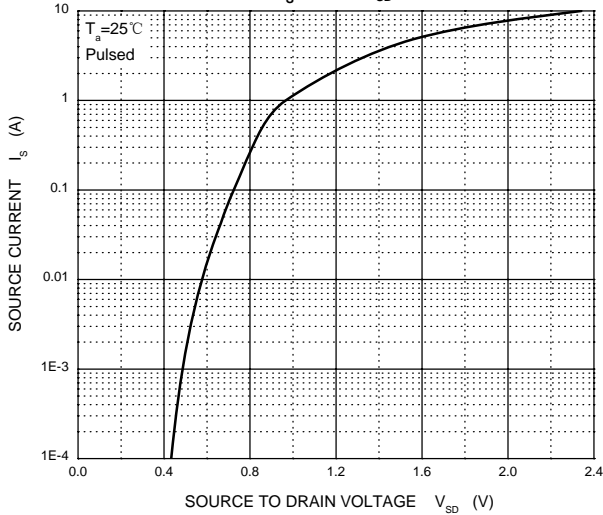
$R_{DS(ON)}$  —  $I_D$



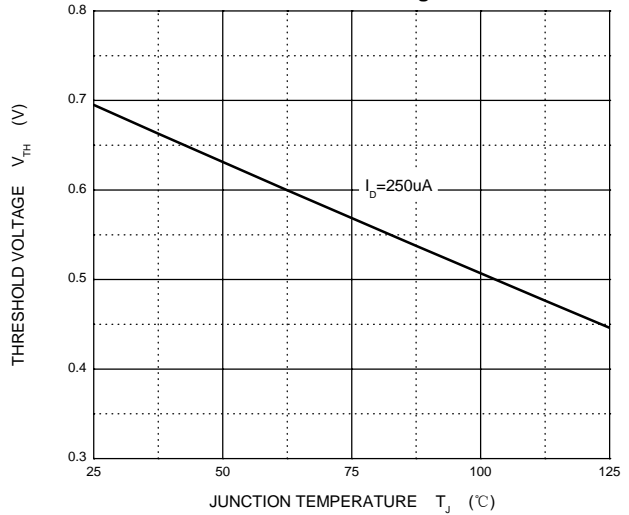
$R_{DS(ON)}$  —  $V_{GS}$



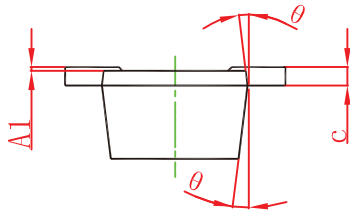
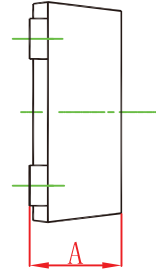
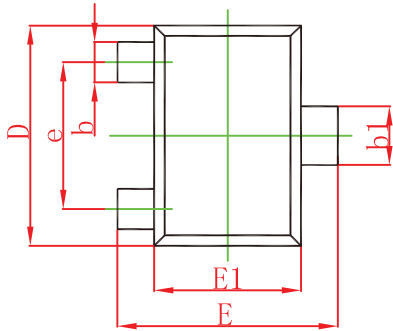
$I_S$  —  $V_{SD}$



Threshold Voltage

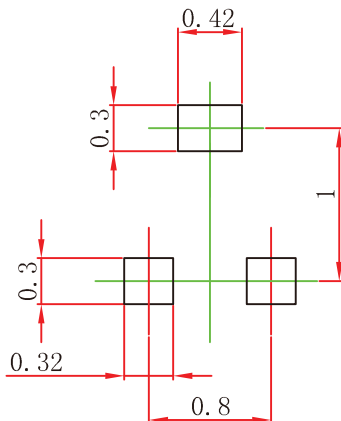


## SOT-723 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A		0.500		0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c		0.150		0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
$\theta$	7° REF.		7° REF.	

## SOT-723 Suggested Pad Layout



**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.