N-Channel Enhancement MOSFET

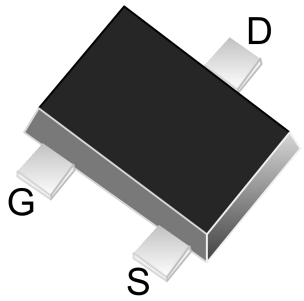
Features

- Small Signal MOSFET
- V_{DS}= 20V, I_D = 0.75A
  - $R_{DS(on)}$ < 0.38Ω @ V_{GS} = 4.5V
  - $R_{DS(on)}$ < 0.45Ω @ V_{GS} = 2.5V
- Trench LV MOSFET Technology
- ESD Protected

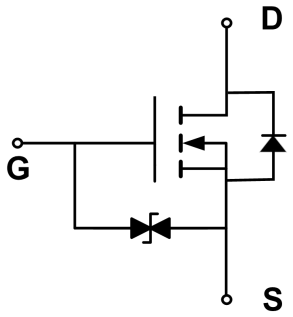
Mechanical Characteristics

- SOT-723 Package
- Marking : Making Code
- RoHS Compliant

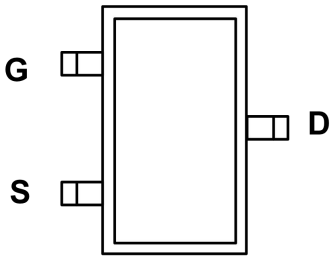
Schematic & PIN Configuration



SOT-723



Device Symbol



SOT-723(Top View)

Absolute Maximum Ratings (T_A = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A=25°C	I_D	0.75	A
Pulsed Drain Current [1]		I_{DM}	3	A
Power Dissipation	T_A=25°C	P_D	150	mW
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Thermal Resistance from Junction to Ambient [2]		$R_{\theta JA}$	833	°C/W

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS} = 0V, I_D = 250μA	20	-	-	V
Gate-body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±10V	-	-	±20	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V, V_{GS} = 0V	-	-	1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.35	0.75	1.1	V
Drain-Source On-state Resistance (3)	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 0.65A	-	0.19	0.38	Ω
		V_{GS} = 2.5V, I_D = 0.55A	-	0.29	0.45	
		V_{GS} = 1.8V, I_D = 0.45A	-	0.70	-	
Dynamic Characteristics (4)						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	-	26.5	-	pF
Output Capacitance	C_{oss}		-	11	-	
Reverse Transfer Capacitance	C_{rss}		-	5.2	-	
Switching Characteristics (4)						
Turn-on Delay Time	$t_{d(on)}$	V_{GS} =4.5V, V_{DD} =10V, I_D =0.65A, R_G=3Ω	-	6.7	-	ns
Rise Time	t_r		-	4.8	-	
Turn-off Delay Time	$t_{d(off)}$		-	17.3	-	
Fall Time (4)	t_f		-	7.4	-	
Source-Drain Diode Characteristics						
Body Diode Voltage	V_{SD}	I_S=0.15A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	I_S		-	-	0.75	A

Note1.Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

Note2.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.

Note3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.

Note4.This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

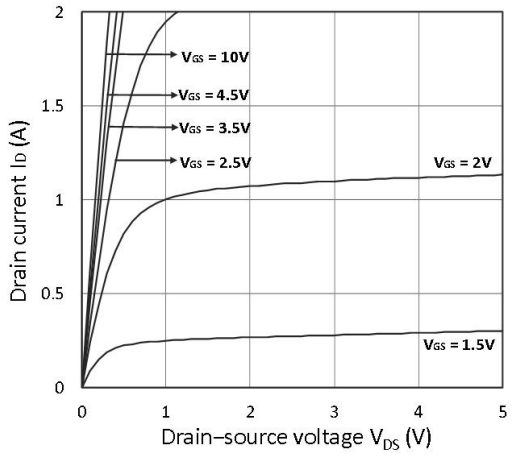


Figure 1. Output Characteristics

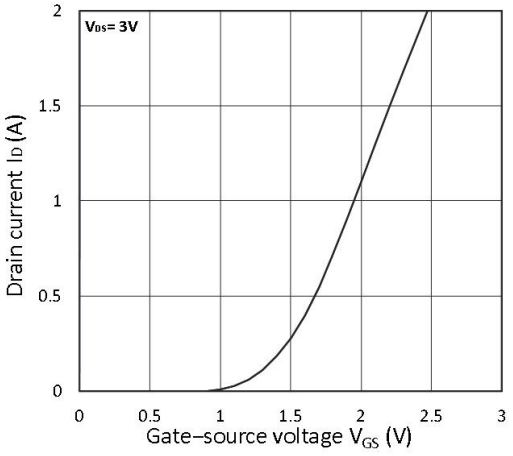


Figure 2. Transfer Characteristics

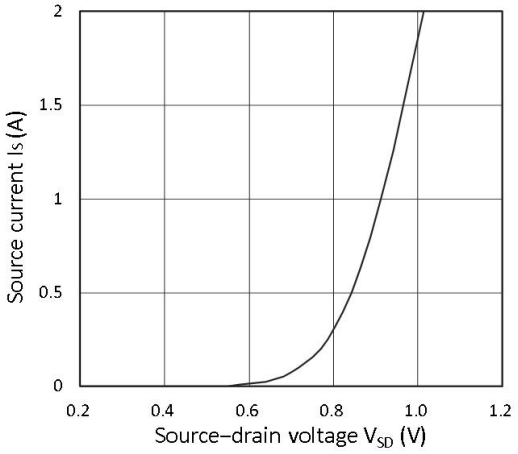


Figure 3. Forward Characteristics of Reverse

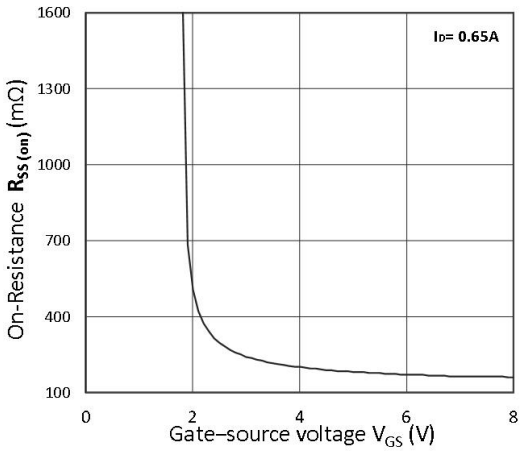


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

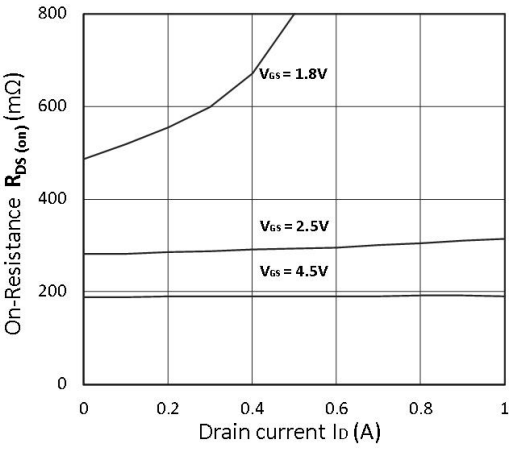


Figure 5. $R_{DS(ON)}$ vs. I_D

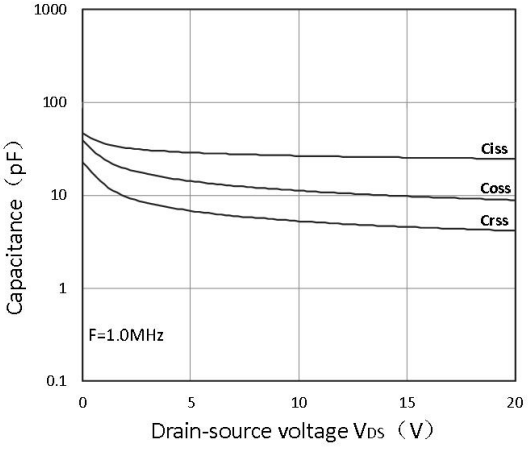
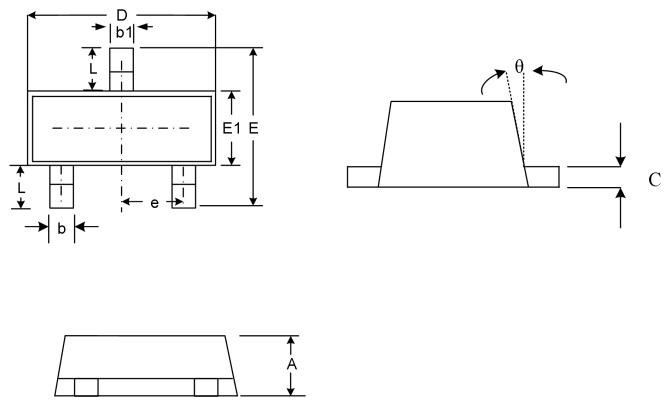


Figure 6. Capacitance Characteristics

Package Dimension

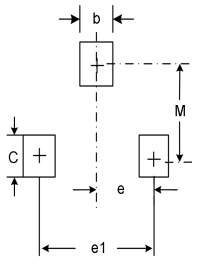
SOT-723

Package Outline



COMMON DIMENSIONS				
SYM BOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
L	0.15	0.25	0.006	0.010
C	0.08	0.17	0.003	0.007
D	1.15	1.25	0.045	0.049
E	1.15	1.25	0.045	0.049
E1	0.75	0.85	0.030	0.033
e	0.40 BSC		0.016 BSC	
θ	0°	10°	0°	10°

Recommended Land Pattern



DIMENSIONS		
DIM	MILLIMETERS	INCHES
C	0.40	0.0157
M	1.0	0.039
e	0.40	0.0157
e1	0.80	0.0314
b	0.40	0.0157

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.

2. Controlling Dimension: Millimeters.

Ordering Information

Part	Package	Marking	Packing Information
EM02N08H	SOT-723		8k/Reel

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2018-05-08	Released Version	Liu Jia Ying	Qi Shu Kun	Liu Jia Ying
1.1	2022-12-28	Update Typeset and package size spec	Yin Peng	Qi Shu Kun	Liu Jia Ying