

Surface Mount P-Channel Enhancement Mode MOSFET

(Pb) Lead(Pb)-Free

Features:

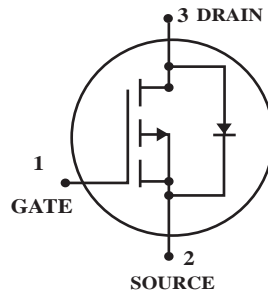
*Super high dense cell design for low $R_{DS(ON)}$

$R_{DS(ON)} < 80 \text{ m}\Omega @ V_{GS} = -4.5\text{V}$

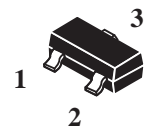
$R_{DS(ON)} < 100 \text{ m}\Omega @ V_{GS} = -2.5\text{V}$

*Rugged and Reliable

*SOT-23 Package



DRAIN CURRENT
- 3 AMPERES
DRAIN SOURCE VOLTAGE
- 20 VOLTAGE



SOT-23

Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unite
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_J = 125^\circ\text{C}$) ⁽¹⁾	I_D	-3	A
Pulsed Drain Current ⁽²⁾	I_{DM}	-11	A
Drain-Source Diode Forward Current (1)	I_S	-1.25	A
Power Dissipation (1)	P_D	1.25	W
Maximax Junction-to-Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Device Marking

WT2307=S07

Electrical Characteristics (T_A=25 °C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

Static (2)

Drain-Source Breakdown Voltage V _{GS} =0V, I _D =-250 uA	V _{(BR)DSS}	-20	-	-	V
Gate-Source Threshold Voltage V _{DS} =V _{GS} , I _D =-250 uA	V _{GS(th)}	-0.5	-0.8	-1.5	V
Gate-Source Leakage Current V _{DS} =0V, V _{GS} =±10V	I _{GSS}	-	-	±100	nA
Zero Gate Voltage Drain Current V _{DS} =-16V, V _{GS} =0V	I _{DSS}	-	-	1	uA
Drain-Source On-Resistance V _{GS} =-4.5V, I _D =-4.0A V _{GS} =-2.5V, I _D =-2.0A	r _{DS(on)}	- -	70 85	80 100	mΩ
On-State Drain Current V _{DS} =-5V, V _{GS} =-4.5A	I _{D(on)}	-15	-	-	A
Forward Transconductance V _{DS} =-5V, I _D =-5A	g _{fs}	4	-	-	S

Dynamic (3)

Input Capacitance V _{DS} =-15V, V _{GS} =0V, f=1MHZ	C _{iss}	-	586	-	PF
Output Capacitance V _{DS} =-15V, V _{GS} =0V, f=1MHZ	C _{oss}	-	101	-	
Reverse Transfer Capacitance V _{DS} =-15V, V _{GS} =0V, f=1MHZ	C _{rss}	-	59	-	

Switching (3)

Turn-On Time V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _L =10Ω, R _{GEN} =6Ω	t _{d(on)}	-	6.5	-	nS
Rise Time V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _L =10Ω, R _{GEN} =6Ω	t _r	-	32.1	-	nS
Turn-Off Time V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _L =10Ω, R _{GEN} =6Ω	t _{d(off)}	-	58.4	-	nS
Fall Time V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _L =10Ω, R _{GEN} =6Ω	t _f	-	48	-	nS
Total Gate Charge V _{DS} =-10V, I _D =-3A, V _{GS} =-4.5V	Q _g	-	5.92	-	nc
Gate-Source Charge V _{DS} =-10V, I _D =-3A, V _{GS} =-4.5V	Q _{gs}	-	1.36	-	nc
Gate-Drain Charge V _{DS} =-10V, I _D =-3A, V _{GS} =-4.5V	Q _{gd}	-	1.4	-	nc
Drain-Source Diode Forward Voltage V _{DS} =0V, I _S =-1.25A	V _{SD}	-	-1.815	-1.2	V

Note: 1. Surface Mounted on FR4 Board t ≤ 10sec.

2. Pulse Test : PW ≤ 300us, Duty Cycle ≤ 2%.

2. Guaranteed by Design, not Subject to Production Testing.

Typical Electrical Characteristics

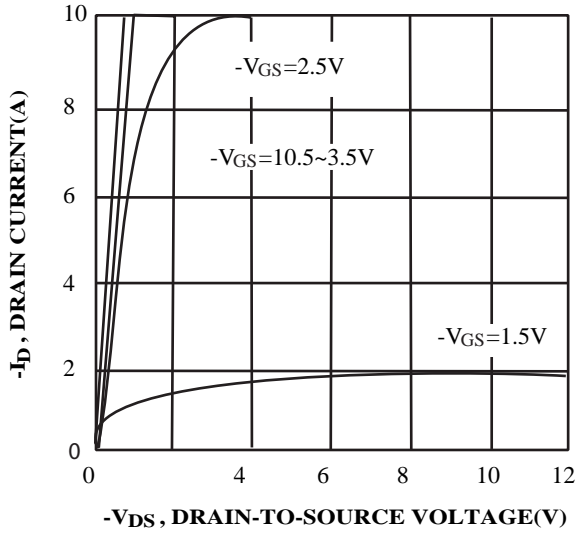


FIG.1 Output Characteristics

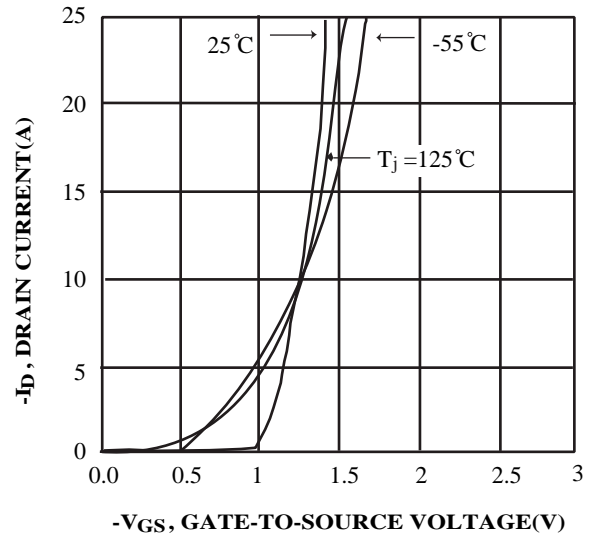


FIG.2 Transfer Characteristics

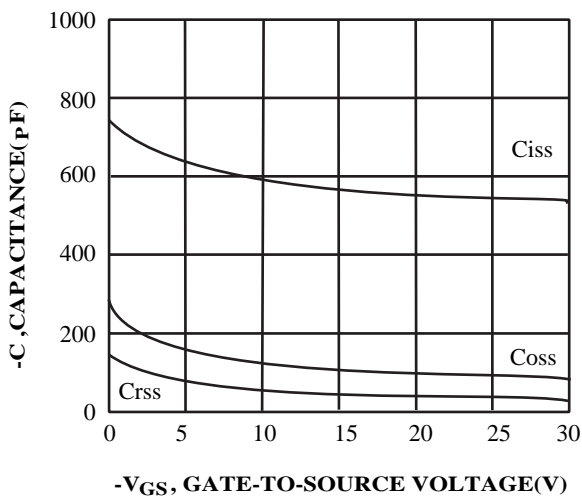


FIG.3 Capacitance

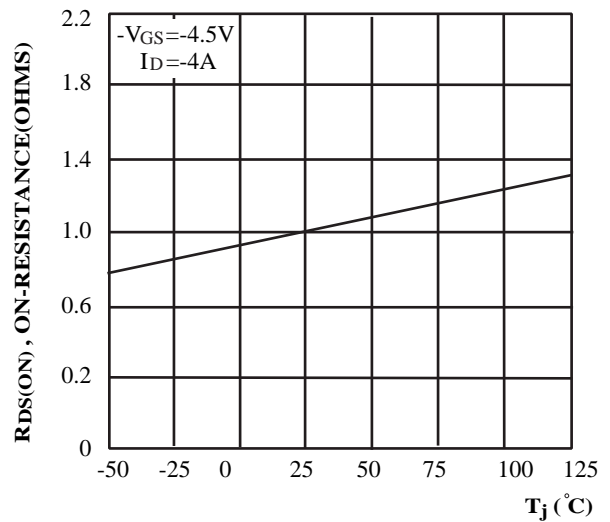


FIG.4 On-Resistance Variation with Temperature

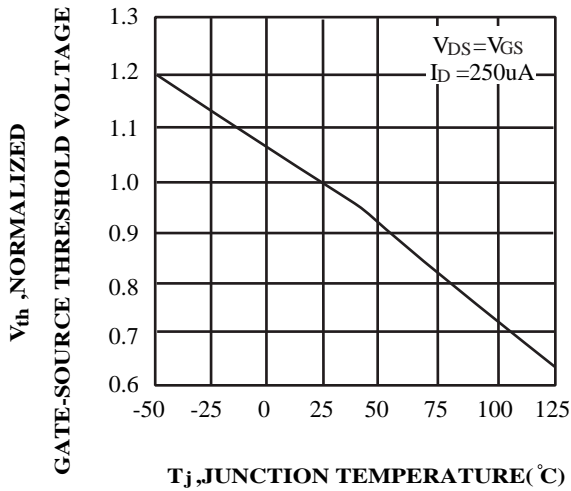


FIG.5 with Temperature

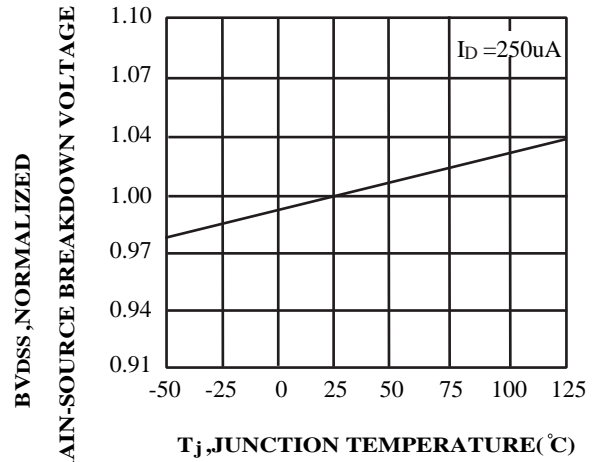


FIG.6 Breakdown Voltage Variation with Temperature

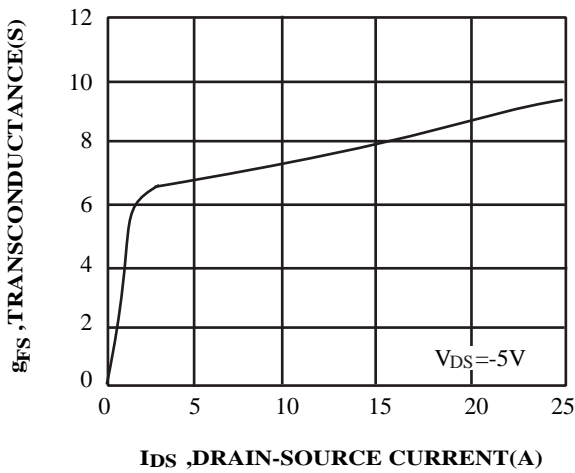


FIG.7 Transconductance Variation with Drain Current

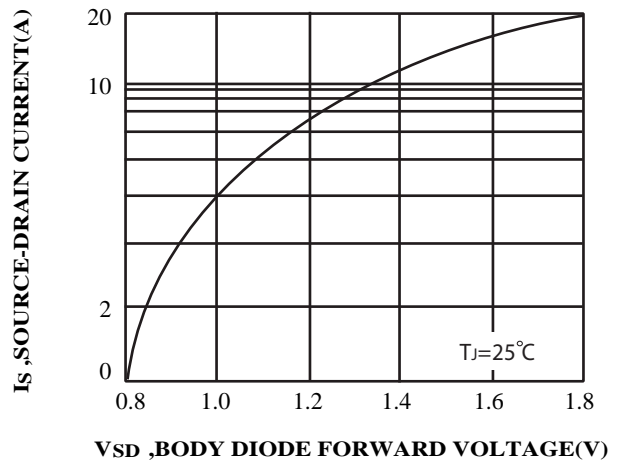


FIG.8 Body Diode Forward Voltage Variation with Source Current

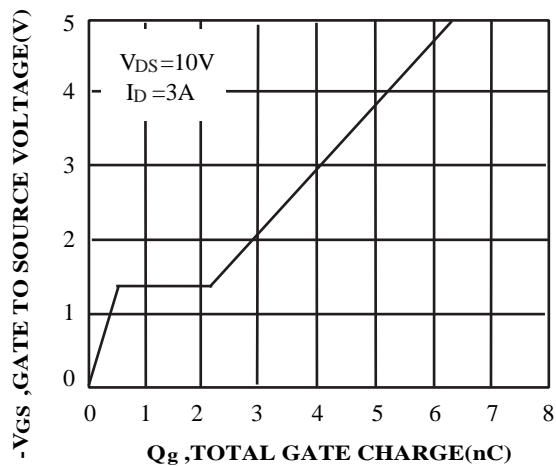


FIG.9 Gate Charge

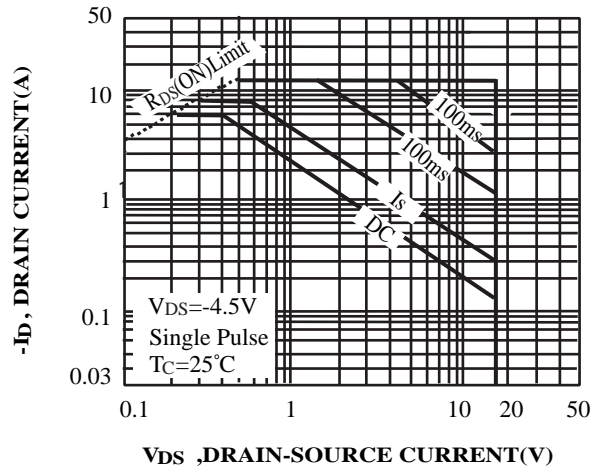


FIG.10 Maximum Safe Operating Area

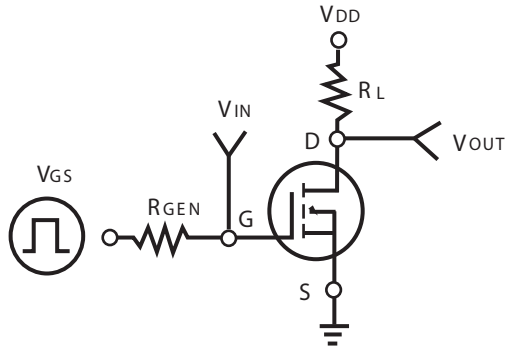


FIG.11 Switching Test Circuit

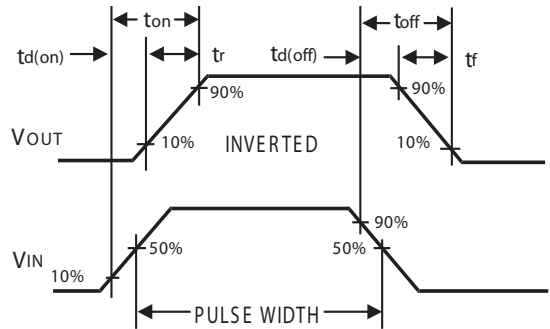
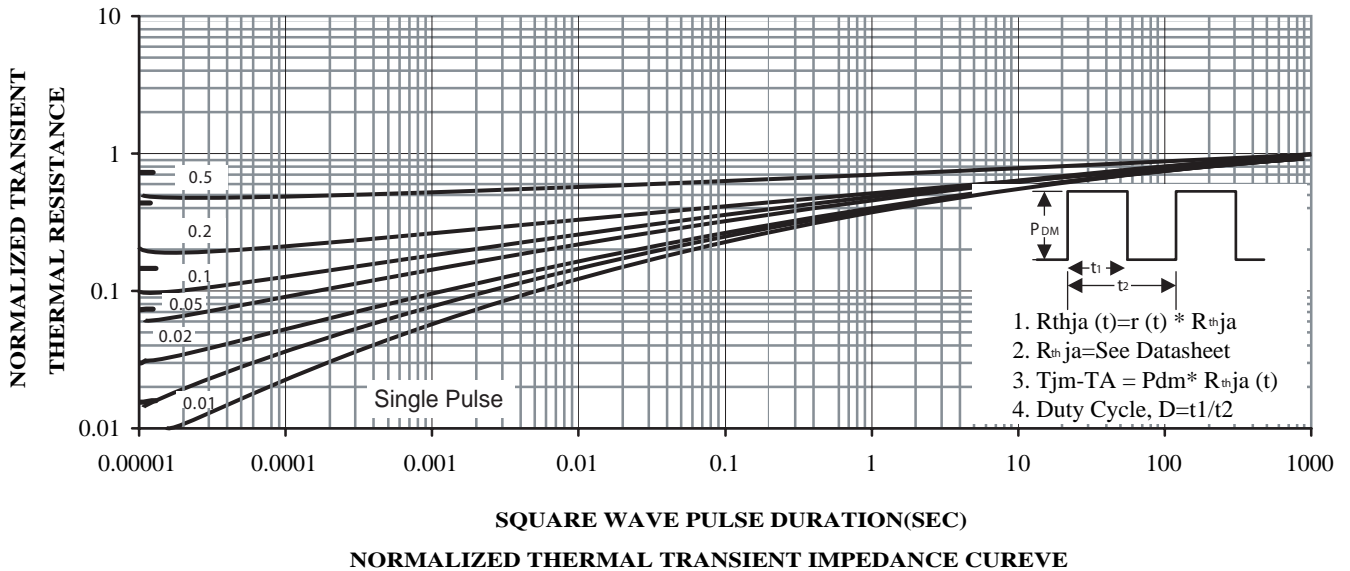
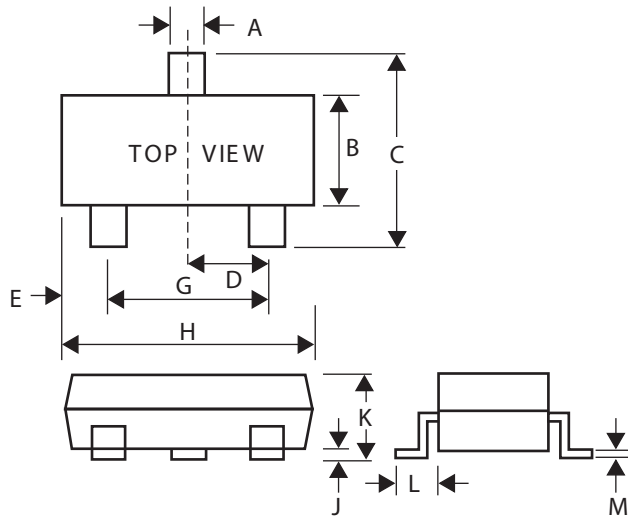


FIG.12 Switching Waveforms



SOT-23 Package Outline Dimensions

Unit:mm



Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25