

GSM1912X6F

20V N-Channel MOSFET

Product Description

GSM1912X6F, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

The device is particularly suited for low voltage power management, such as smart phone and notebook computers and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

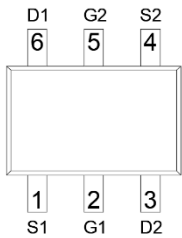
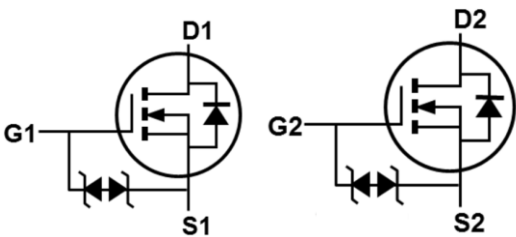
Features

- $R_{DS(ON)} = 280m\Omega @ V_{GS}=4.5V$
- $R_{DS(ON)} = 340m\Omega @ V_{GS}=2.5V$
- $R_{DS(ON)} = 580m\Omega @ V_{GS}=1.8V$
- Low-Voltage Operation
- Low Battery Voltage Operation
- SOT-363 package design
- RoHS Compliant and Halogen Free

Applications

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

Packages & Pin Assignments

SOT-363		Equivalent Circuit	
 Top View			
Pin	Description	Pin	Description
1	Source1	4	Source2
2	Gate1	5	Gate2
3	Drain2	6	Drain1

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM1912X6F	SOT-363	r□□	3,000 PCS
GSM1912 1 2 - Product Code: GSM1912 - Package Code: 1 is X6 for SOT-363 - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
r□□ - Product Code: r - GS Code: □□			

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

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate-Source Voltage	±10	V
I _D	Continuous Drain Current	T _A =25°C	A
		T _A =70°C	
I _{DM}	Pulsed Drain Current	3	A
I _S	Continuous Body Diode Forward Current	0.3	A
P _D	Total Power Dissipation	T _A =25°C	W
		T _A =70°C	
T _J	Operating Junction Temperature	+150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

Electrical Characteristics (T_A=25°C, unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.4	-	1.0	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±10V	-	-	±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V	-	-	1	μA
		V _{DS} =16V, V _{GS} =0V, T _J =85°C	-	-	30	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.5A	-	240	280	mΩ
		V _{GS} =2.5V, I _D =0.4A	-	300	340	
		V _{GS} =1.8V, I _D =0.2A	-	500	580	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =1.0A	-	1	-	S
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V	-	0.8	1.2	V
Dynamic characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	70	-	pF
C _{oss}	Output Capacitance		-	20	-	
C _{rss}	Reverse Transfer Capacitance		-	8	-	
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =0.25A	-	1.06	1.38	nC
Q _{gs}	Gate-Source Charge		-	0.18	-	
Q _{gd}	Gate-Drain Charge		-	0.32	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} =10V, I _D =0.25A, V _{GS} =4.5V, R _G =10Ω	-	18	26	ns
t _r	Turn-On Rise Time		-	20	28	
t _{d(off)}	Turn-Off Delay Time		-	70	110	
t _f	Turn-Off Fall Time		-	25	40	

Typical Performance Characteristics

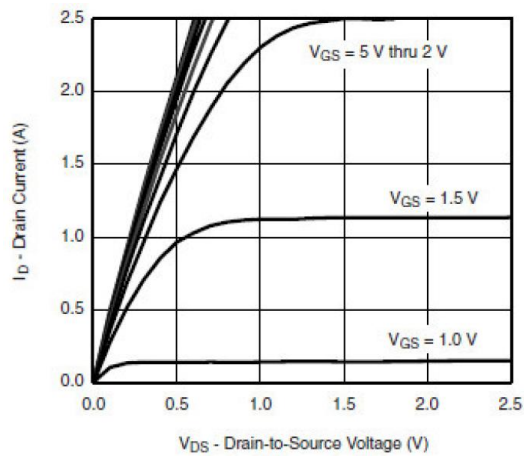


Fig. 1 Output Characteristics

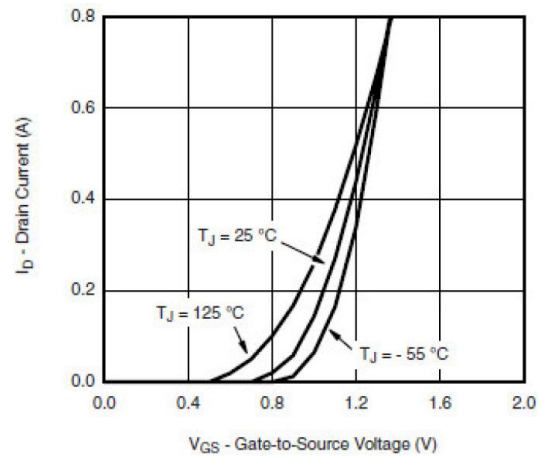


Fig. 2 Transfer Characteristics

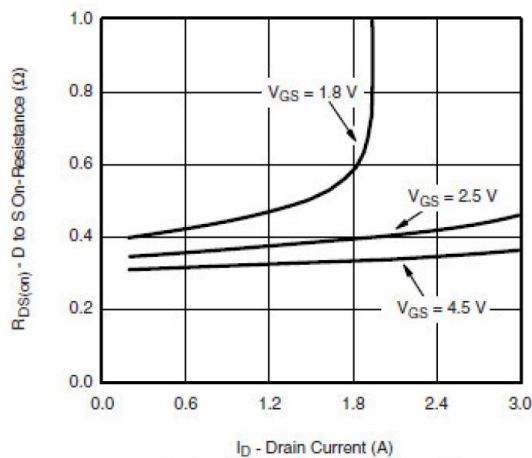


Fig. 3 On-Resistance vs. Drain Current

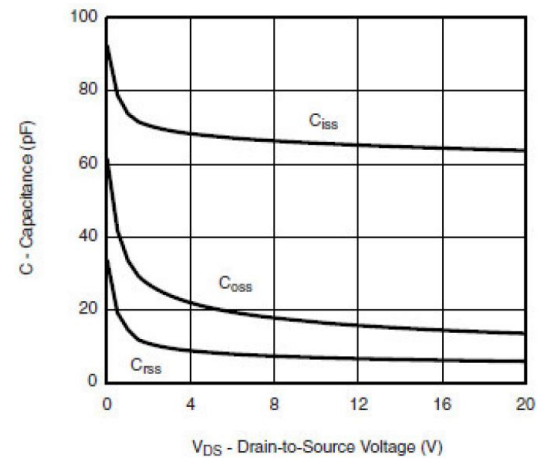


Fig. 4 Capacitance

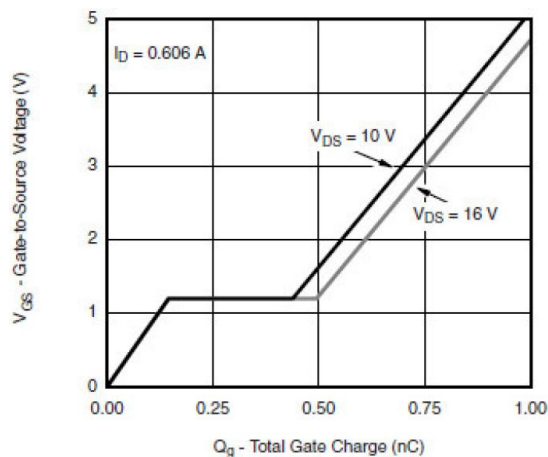


Fig. 5 Gate Charge

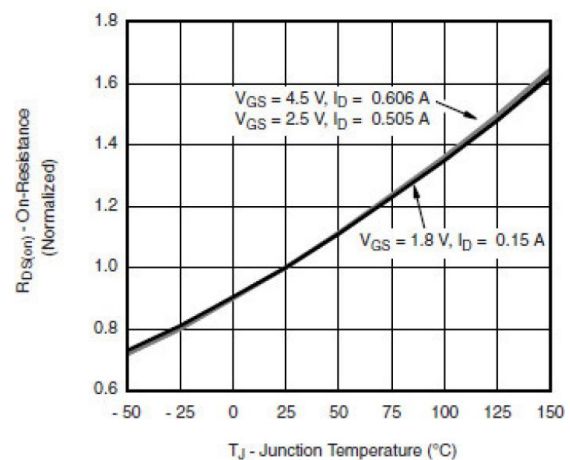


Fig. 6 ON-Resistance vs. Junction Temperature

Typical Performance Characteristics (Continue)

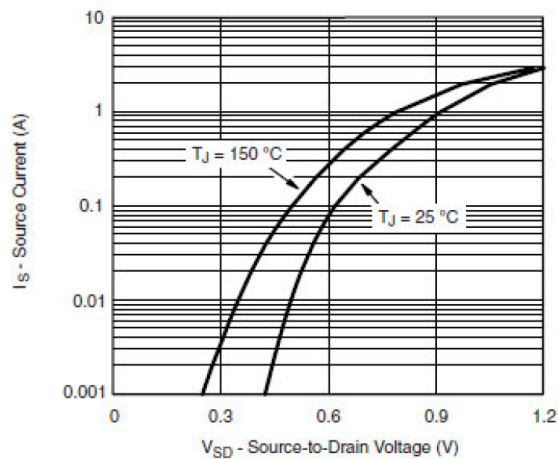


Fig. 7 Source-Drain Diode Forward Voltage

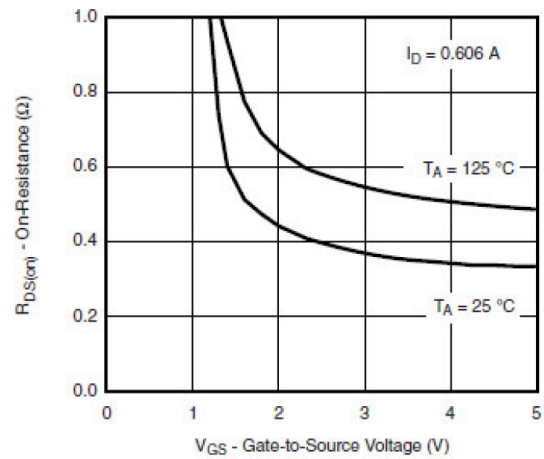


Fig. 8 $R_{DS(on)}$ vs. V_{GS} vs. Temperature

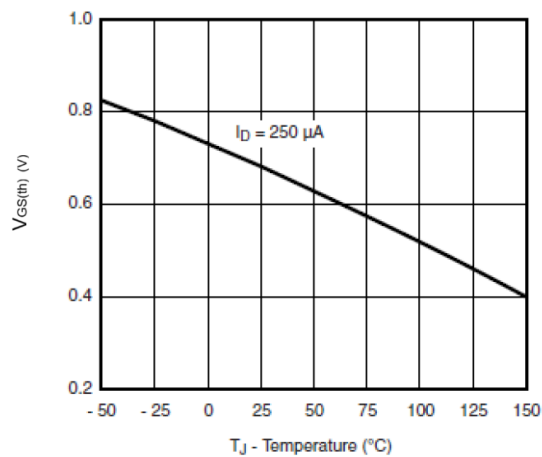


Fig. 9 Threshold Voltage

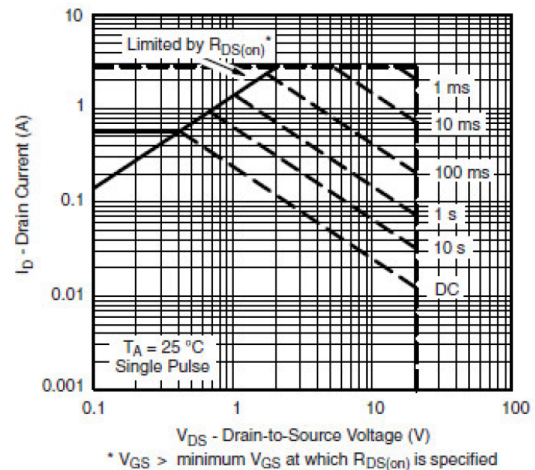


Fig. 10 Safe Operating Area Junction-To-Ambient

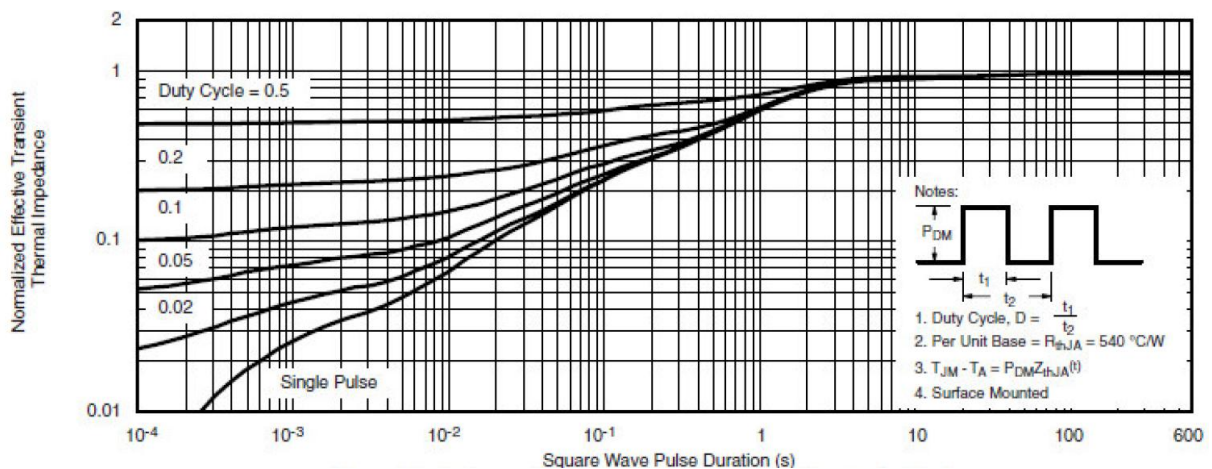
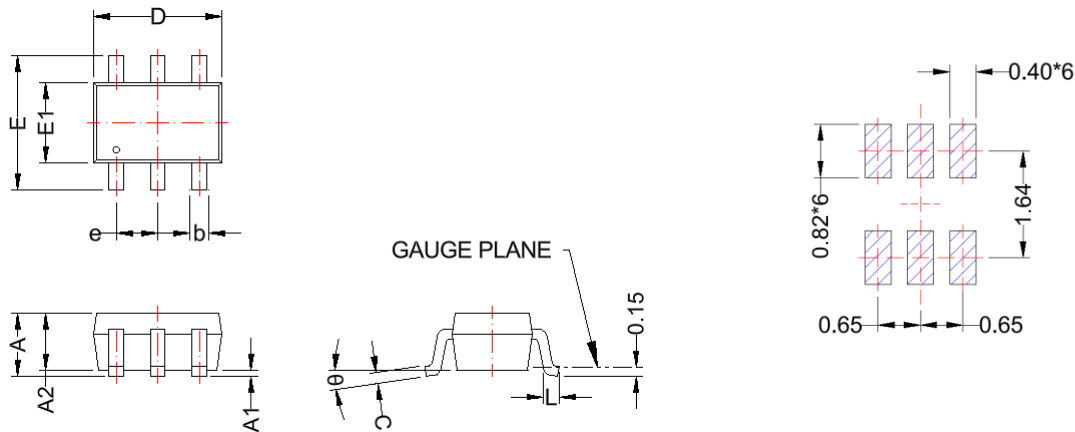


Fig. 11 Normalized Thermal Transient Impedance Junction-To-Ambient

SOT-363

Package Dimension

Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.70	1.00	0.028	0.039
b	0.15	0.30	0.006	0.012
c	0.08	0.25	0.003	0.010
D	1.80	2.20	0.071	0.087
E	1.80	2.40	0.071	0.094
E1	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
L	0.26	0.45	0.010	0.018
θ	0°	8°	0°	8°

NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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