

GSM2145X5F

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM2145, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low Voltage power management, such as smart Phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

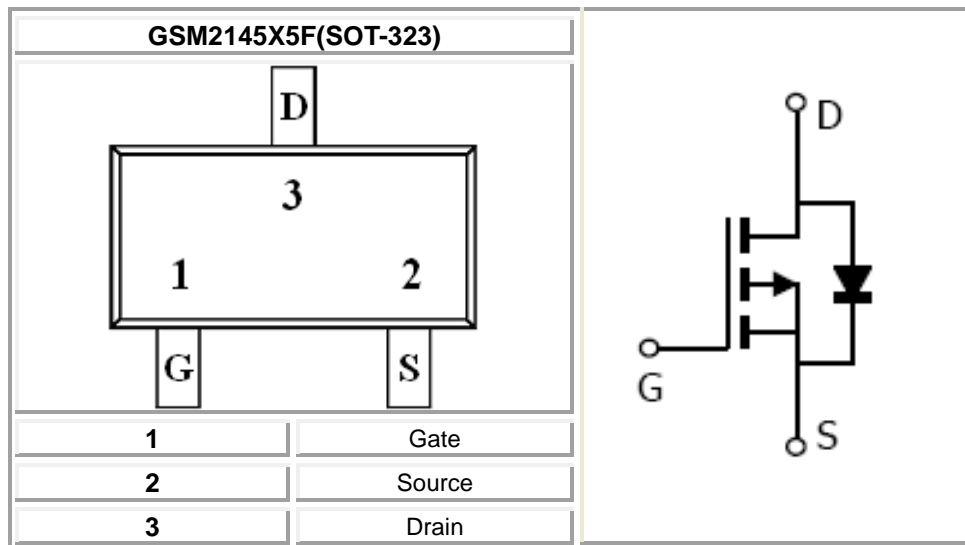
Features

- -20V/-4A, $R_{DS(ON)}=55m\Omega@V_{GS}=-4.5V$
- -20V/-3A, $R_{DS(ON)}=75m\Omega@V_{GS}=-2.5V$
- -20V/-2A, $R_{DS(ON)}=100m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

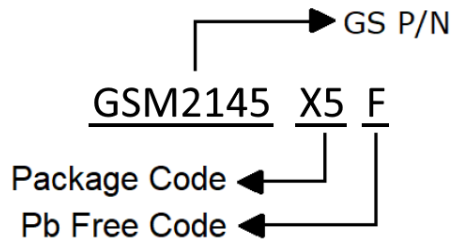
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

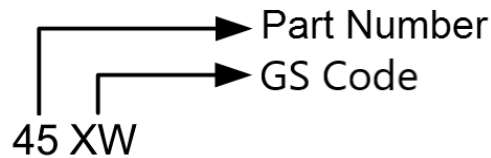


Ordering Information



Part Number	Package	Quantity Reel
GSM2145X5F	SOT-323	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	-20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current ² (Steady State)	T _A =25°C	-2.3
		T _A =70°C	-1.9
I _{DM}	Pulsed Drain Current	-10	A
P _D	Power Dissipation	T _A =25°C	0.46
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient ¹	270	°C/ W
R _{θJA}	Thermal Resistance-Junction to Ambient ²	205	°C/ W

Note1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Note2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

Electrical Characteristics

(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.4		-0.9	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	uA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = -4.5V, I _D =-4A		49	55	mΩ
		V _{GS} = -2.5V, I _D =-3A		66	75	
		V _{GS} = -1.8V, I _D =-2A		90	100	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-3.6A		7.8		S
V _{SD}	Diode Forward Voltage	I _S =-1.6A, V _{GS} =0V		-0.8	-1.2	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-2.3A		6.5		nC
Q _{gs}	Gate-Source Charge			1.2		
Q _{gd}	Gate-Drain Charge			0.9		
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		616		pF
C _{oss}	Output Capacitance			86		
C _{rss}	Reverse Transfer Capacitance			65		
t _{d(on)}	Turn-On Time	V _{DS} =-10V, R _L =4Ω, I _D =-1A, V _{GS} =-4.5V, R _G =6Ω		16		ns
t _r				27		
t _{d(off)}	Turn-Off Time			40		
t _f				34		

Typical Performance Characteristics

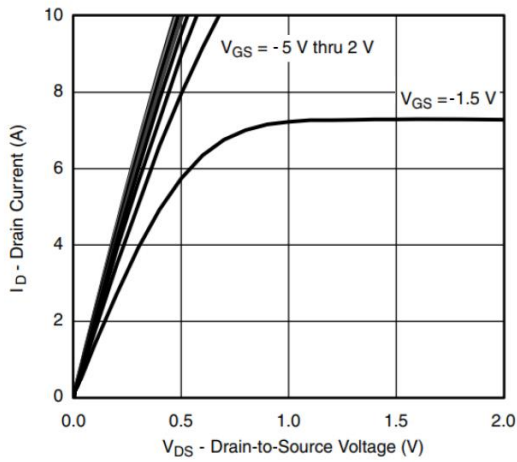


Fig. 1 Typical Output Characteristics

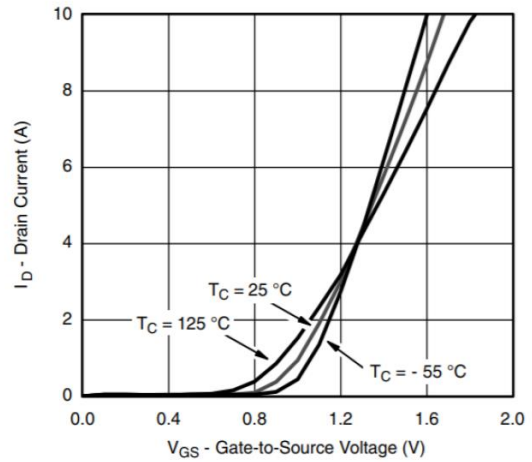


Fig. 2 Typical Transfer Characteristics

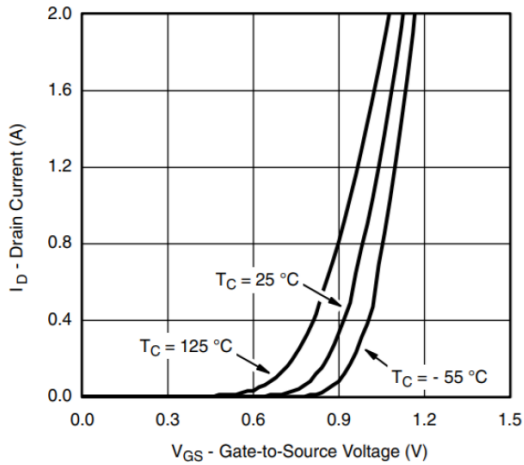


Fig. 3 Typical Drain-Source On-Resistance vs. I_D and T_C

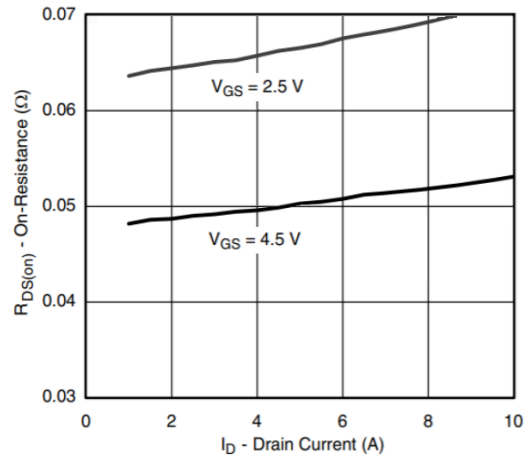


Fig. 4 Typical On-Resistance vs. I_D and V_{GS}

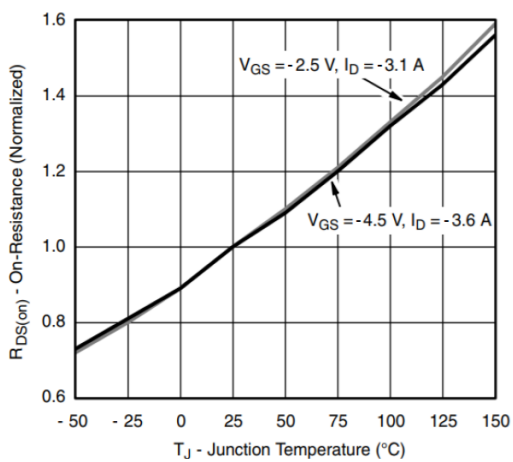


Fig. 5 On-Resistance Variation with T_J

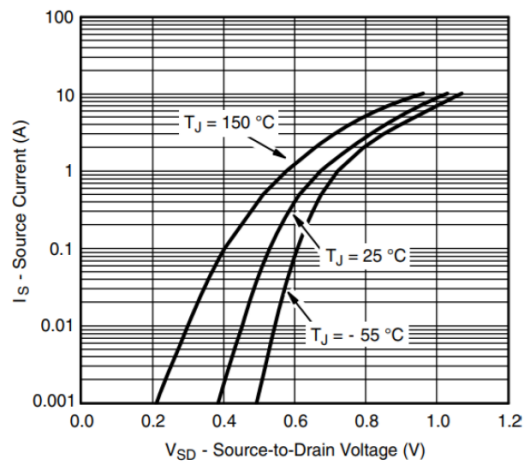


Fig. 6 Diode Forward Voltage vs. Current

Typical Performance Characteristics (continue)

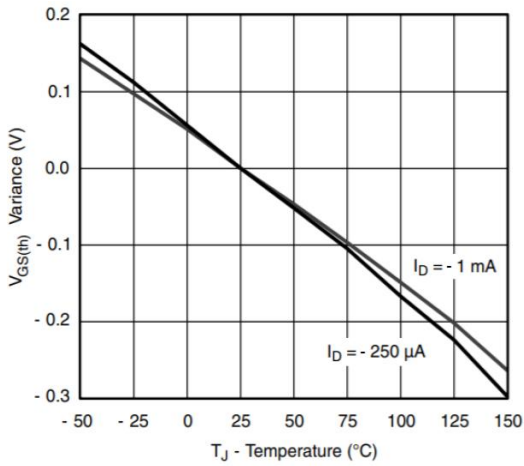


Fig. 7 Gate Threshold Variation vs. T_J

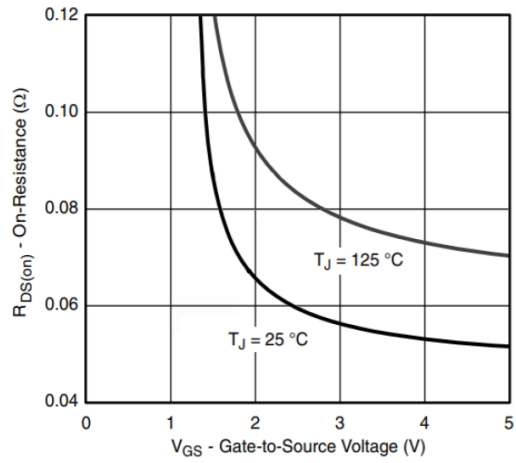


Fig. 8 Typical Transfer Characteristic

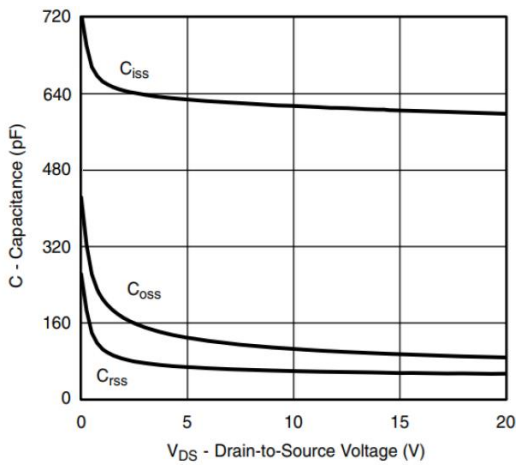


Fig. 9 Typical Capacitance

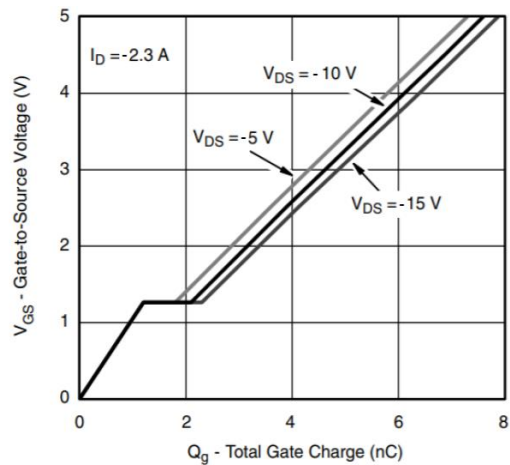


Fig. 10 Gate Charge

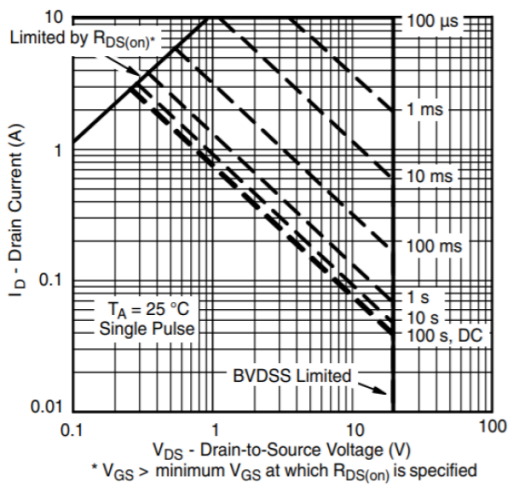
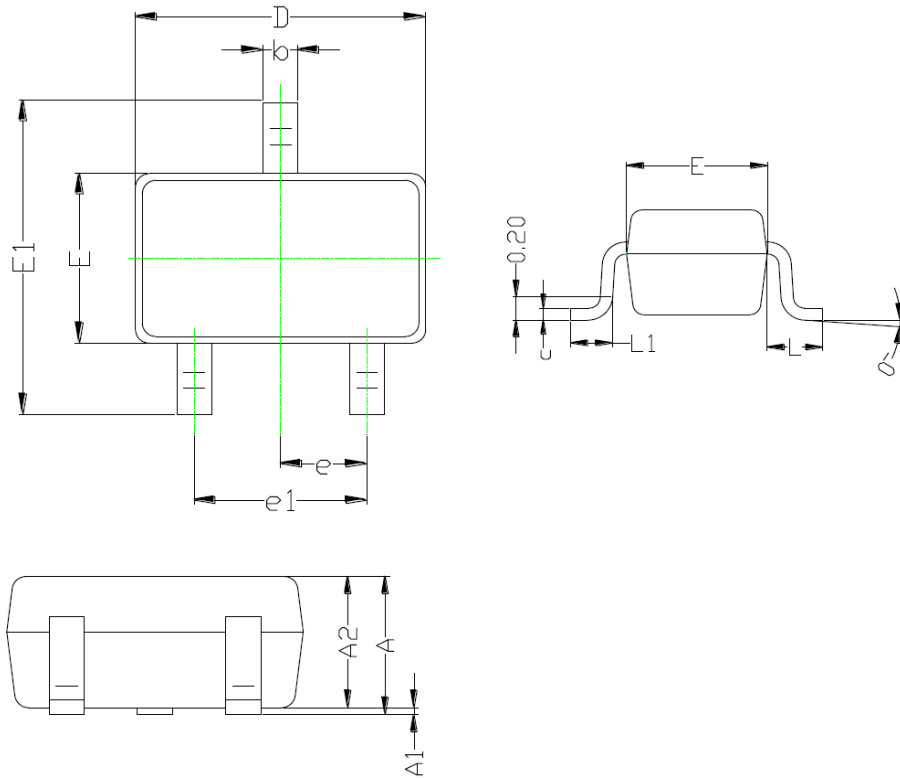


Figure. 11 SOA, Safe Operation Area

Package Dimension

SOT-323









Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.015
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.086
E	1.150	1.350	0.059	0.053
E1	2.150	2.400	0.084	0.094
e	0.650 TYP		0.025 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.450	0.010	0.017
θ	0°	8°	0°	8°

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