

GSM3415

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM3415, 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.

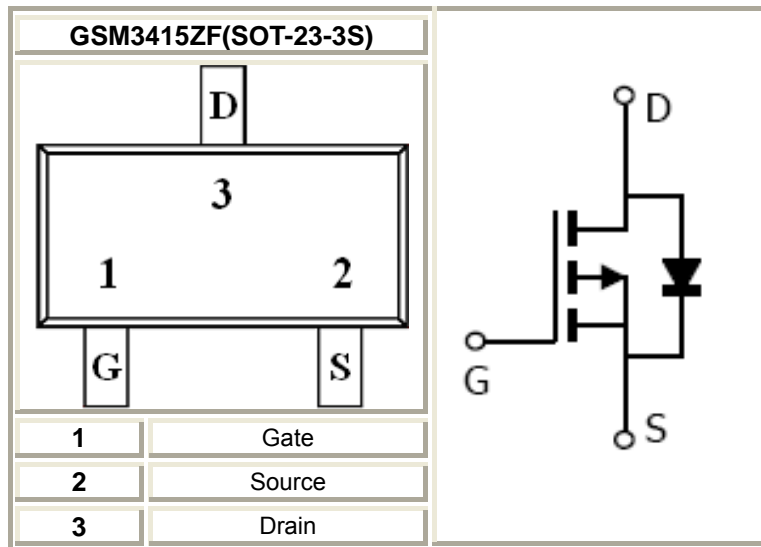
Features

- -20V/-4.9A, $R_{DS(ON)}=45m\Omega@V_{GS}=-4.5V$
- -20V/-3.4A, $R_{DS(ON)}=58m\Omega@V_{GS}=-2.5V$
- -20V/-2.2A, $R_{DS(ON)}=85m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3S package design

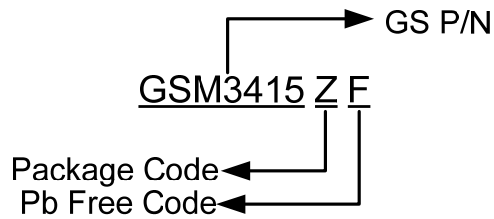
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

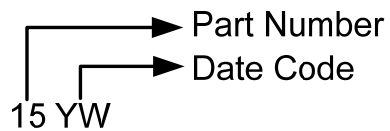


Ordering Information



Part Number	Package	Quantity Reel
GSM3415ZF	SOT-23-3S	3000 PCS

Marking Information



Absolute Maximum Ratings

($T_A=25^{\circ}\text{C}$ unless otherwise noted)

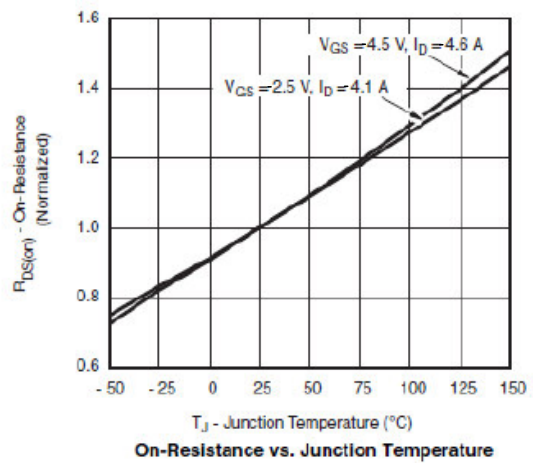
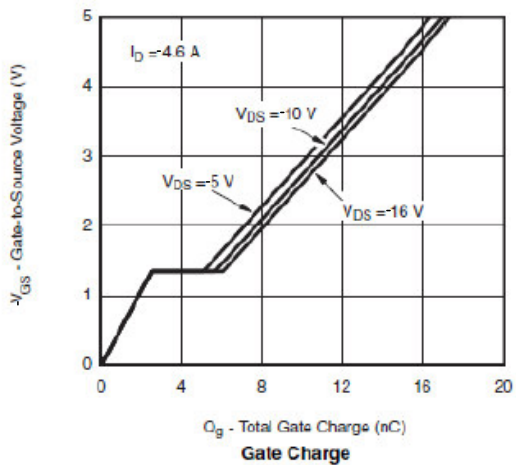
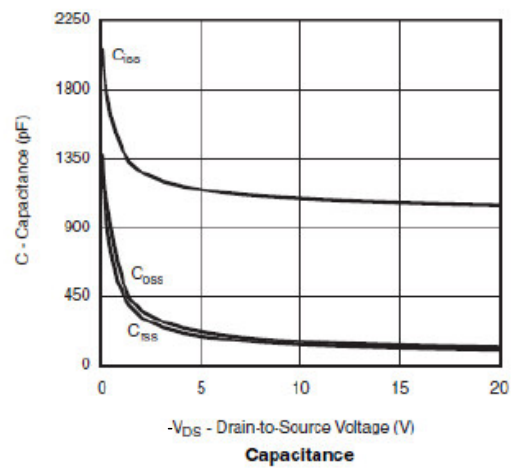
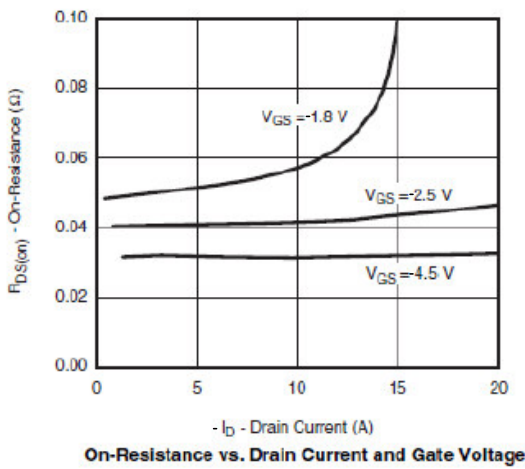
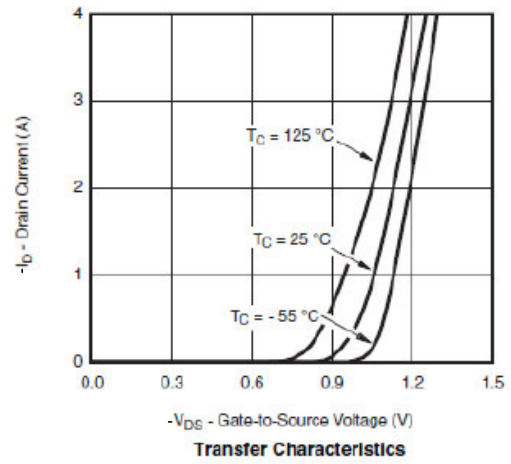
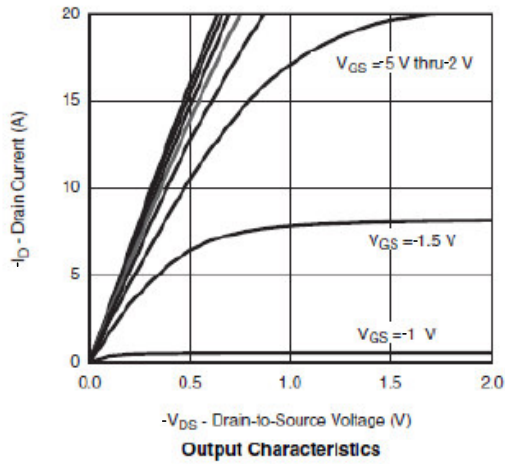
Symbol	Parameter	Typical	Unit	
V_{DSS}	Drain-Source Voltage	-20	V	
V_{GSS}	Gate -Source Voltage	± 12	V	
I_D	Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_C=25^{\circ}\text{C}$	-4.9	A
		$T_C=70^{\circ}\text{C}$	-3.9	A
I_{DM}	Pulsed Drain Current	-10	A	
I_S	Continuous Source Current(Diode Conduction)	-1.6	A	
P_D	Power Dissipation	$T_C=25^{\circ}\text{C}$	1.56	W
T_J	Operating Junction Temperature	150	$^{\circ}\text{C}$	
T_{STG}	Storage Temperature Range	-55/150	$^{\circ}\text{C}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	120	$^{\circ}\text{C}/\text{W}$	

Electrical Characteristics

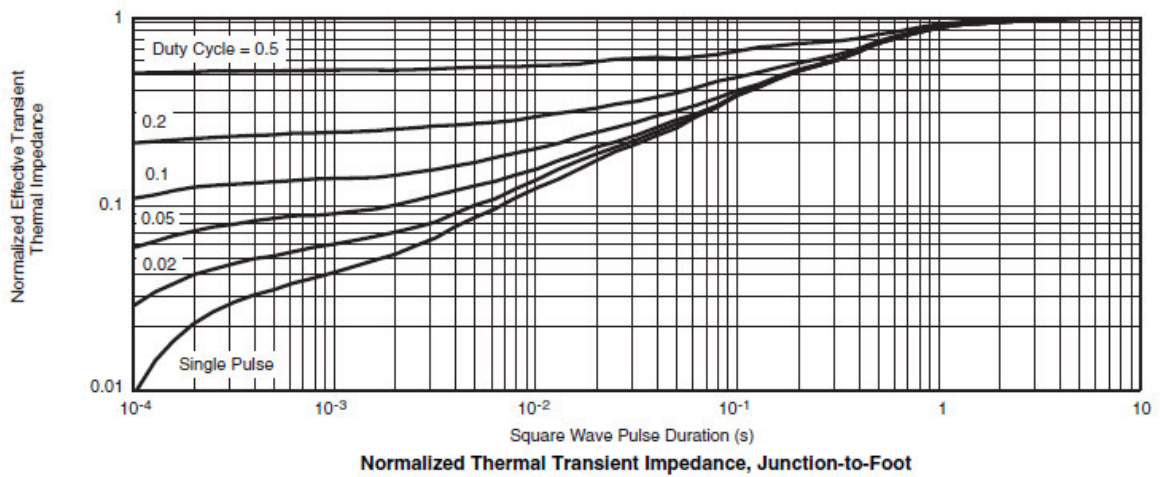
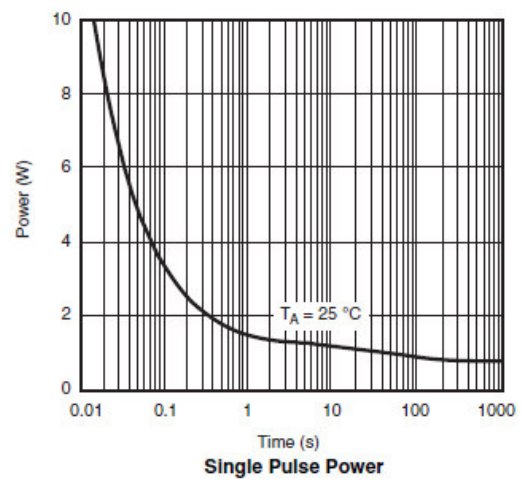
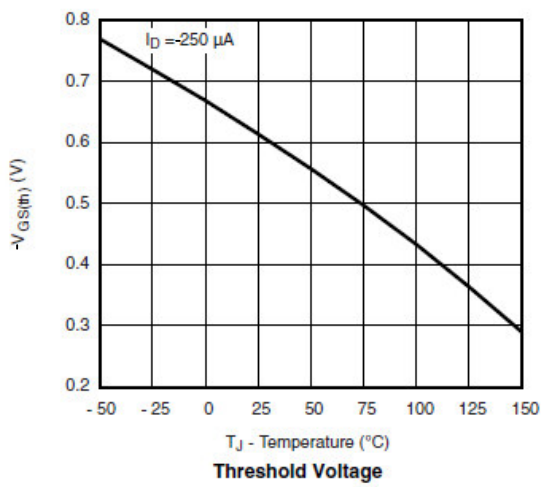
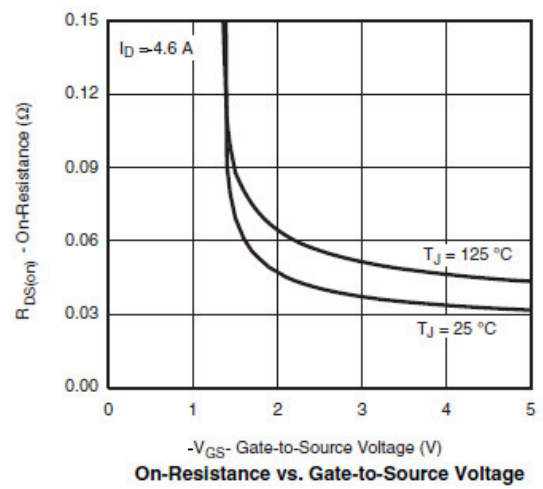
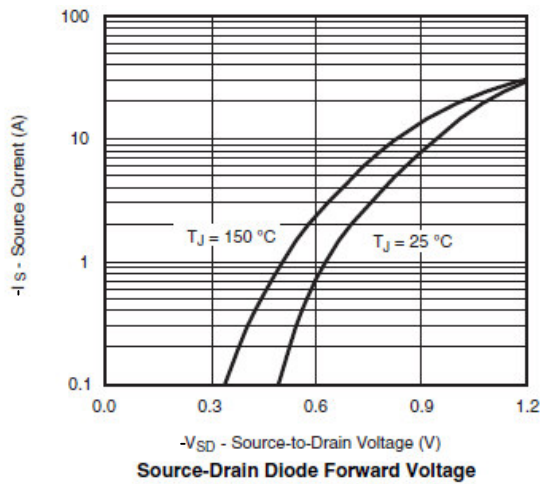
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.4		-0.9	
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	μA
		V _{DS} =-16V, V _{GS} =0V T _J =85°C			-10	
I _{D(on)}	On-State Drain Current	V _{DS} ≥-5V, V _{GS} =-4.5V	-6			A
		V _{DS} ≤-5V, V _{GS} =-2.5V	-4			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} = -4.5V, I _D =-4.9A		40	45	mΩ
		V _{GS} = -2.5V, I _D =-3.4A		50	58	
		V _{GS} = -1.8V, I _D =-2.2A		60	85	
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-3.6A		10		S
V _{SD}	Diode Forward Voltage	I _S =-1.6A, V _{GS} =0V		-0.85	-1.2	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-2.5V, I _D =-4.0A		10	18	nC
Q _{gs}	Gate-Source Charge			2.5		
Q _{gd}	Gate-Drain Charge			3.5		
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		1050		pF
C _{oss}	Output Capacitance			165		
C _{rss}	Reverse Transfer Capacitance			135		
t _{d(on)}	Turn-On Time	V _{DD} =-10V, R _L =2.7Ω, I _D =-3.7A, V _{GEN} =-4.5V, R _G =1Ω		15	25	ns
t _r				25	40	
t _{d(off)}	Turn-Off Time			40	65	
t _f				15	25	

Typical Performance Characteristics

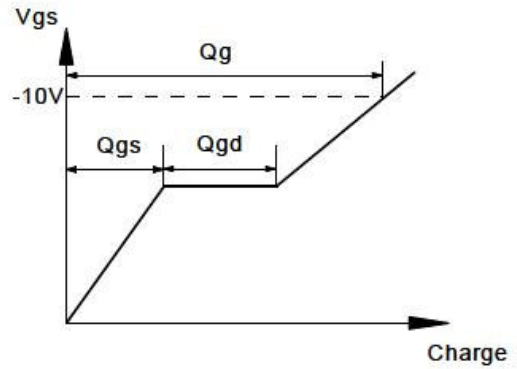
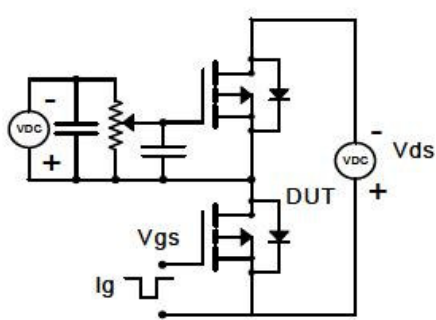


Typical Performance Characteristics (continue)

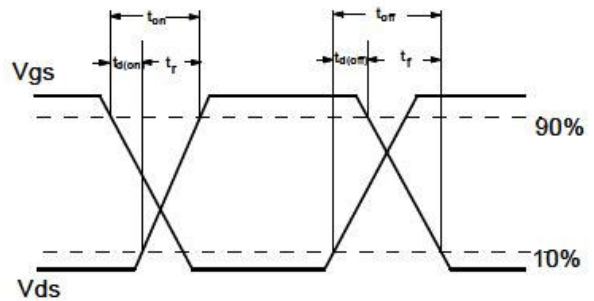
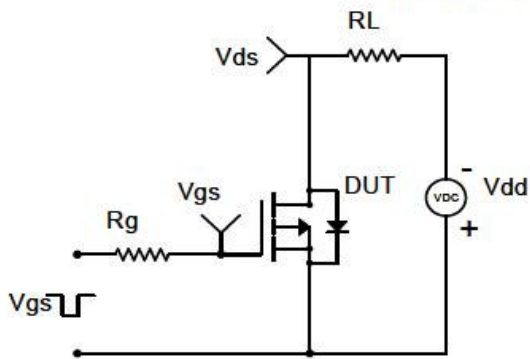


Typical Performance Characteristics (continue)

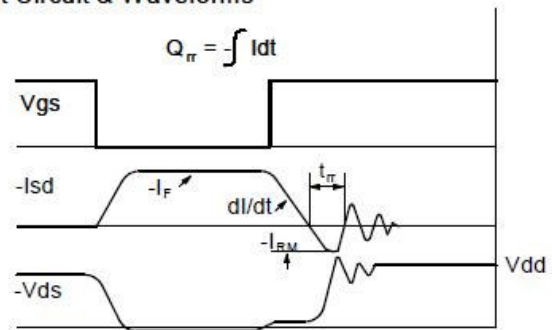
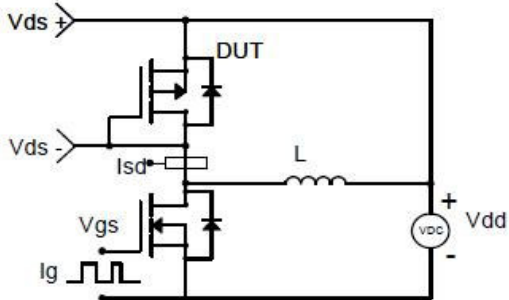
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

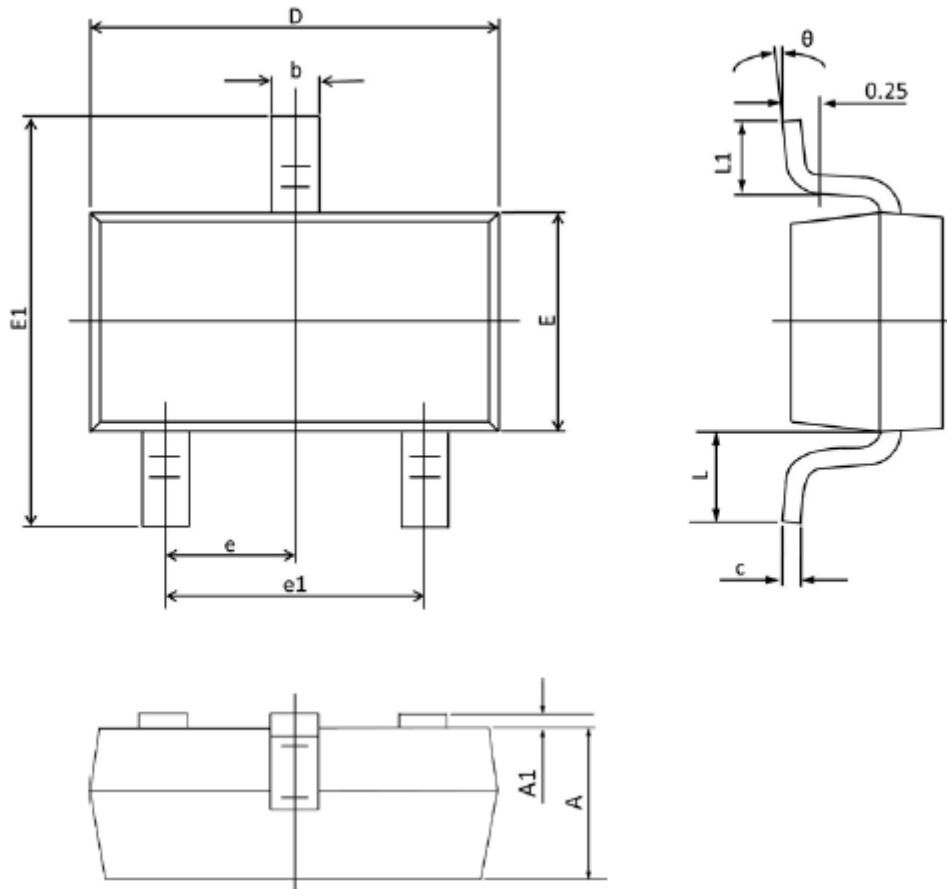


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-23-3S










Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.9	1.105	0.035	0.041
A1	0	0.1	0	0.004
b	0.3	0.5	0.012	0.02
c	0.08	0.15	0.003	0.006
D	2.8	3.0	0.11	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.1
e	0.95 TYP.		0.037 TYP.	
e1	1.8	2.0	0.071	0.079
L	0.55 REF.		0.022 REF.	
L1	0.3	0.5	0.012	0.02
θ	0°	8°	0°	8°



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