GSM3458

60V N-Channel Enhancement Mode MOSFET

Product Description

GSM3458, N-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

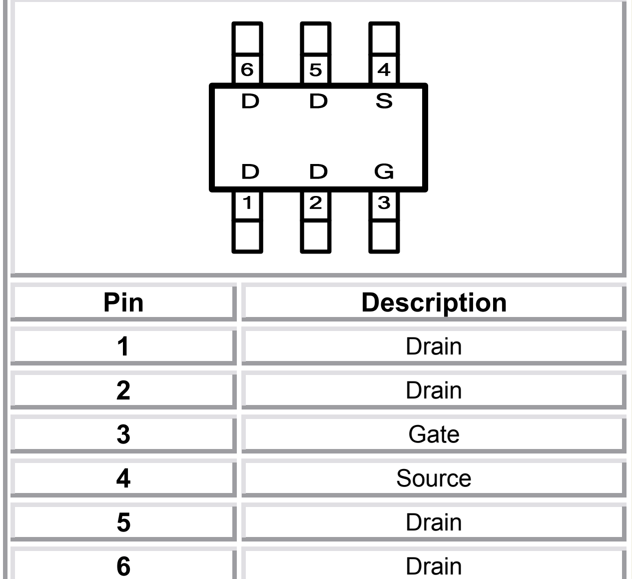
- 60V/5.6A,$R_{DS(ON)}$=60mΩ@V_{GS}=10V
- 60V/3.8A,$R_{DS(ON)}$=66mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

Applications

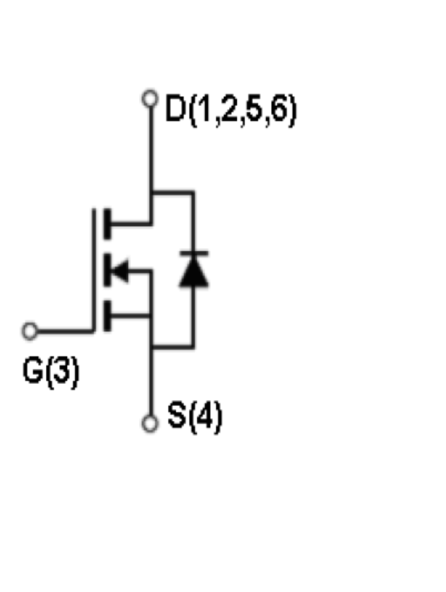
- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

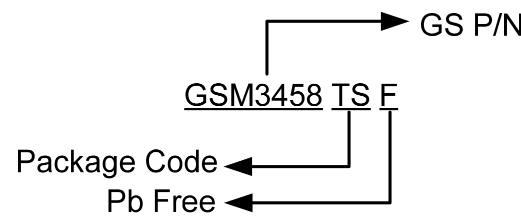
GSM3458TSF(TSOP-6)



Pin	Description
1	Drain
2	Drain
3	Gate
4	Source
5	Drain
6	Drain

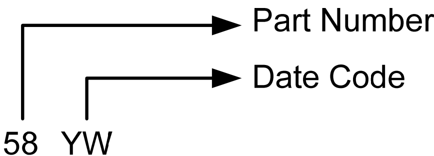


Ordering Information



Part Number	Package	Quantity Reel
GSM3458TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C, unless otherwise noted

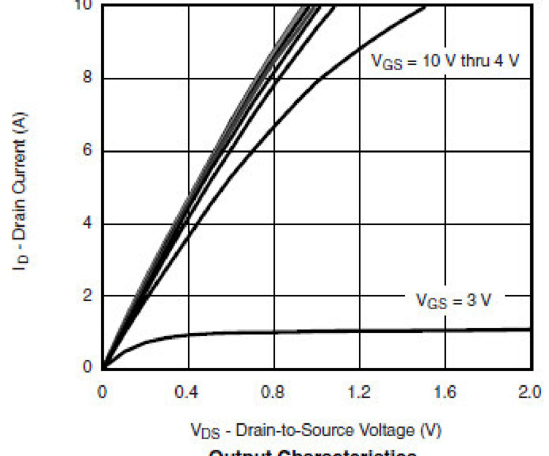
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current(T_J=150°C)	T_A=25°C	5.6	A
		T_A=70°C	3.8	
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current(Diode Conduction)		1.6	A
P_D	Power Dissipation	T_A=25°C	2.0	W
		T_A=70°C	1.3	
T_J	Operating Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55/150	°C
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		120	°C/W

Electrical Characteristics

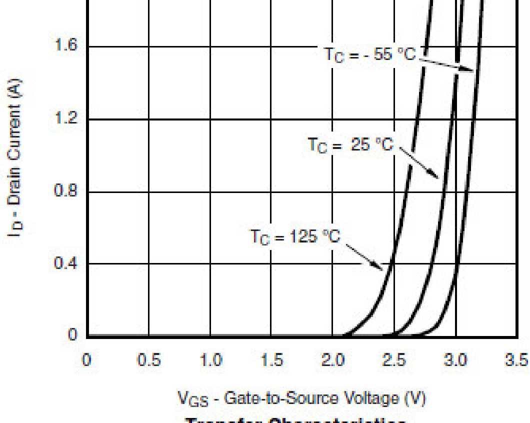
T_A=25ºC, unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0		2.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V, T_J=85ºC			10	uA
$I_{D(on)}$	On-State Drain Current	V_{DS}≧5V,V_{GS}=10V	6			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=5.6A		50	60	mΩ
		V_{GS}=4.5V,I_D=3.8A		55	66	mΩ
g_{FS}	Forward Transconductance	V_{DS}=15V,I_D=3.2A		15		S
V_{SD}	Diode Forward Voltage	I_S=2.5A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=4.5V,I_D=3.2A		6	12	nC
Q_{gs}	Gate-Source Charge			1.5		nC
Q_{gd}	Gate-Drain Charge			1.2		nC
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V,f=1MHz		400		pF
C_{oss}	Output Capacitance			40		pF
C_{rss}	Reverse Transfer Capacitance			20		pF
$t_{d(on)}$	Turn-On Time	V_{DD}=30V, R_L=12Ω,I_D=2.5A, V_{GEN}=10V,R_G=1Ω		8	15	ns
t_r				10	20	ns
$t_{d(off)}$	Turn-Off Time			25	40	ns
t_f				10	20	ns

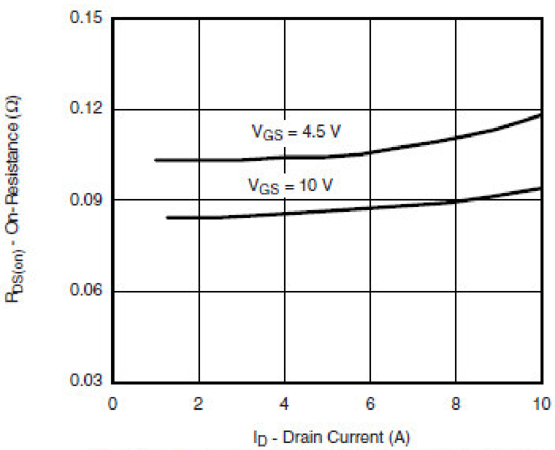
Typical Performance Characteristics



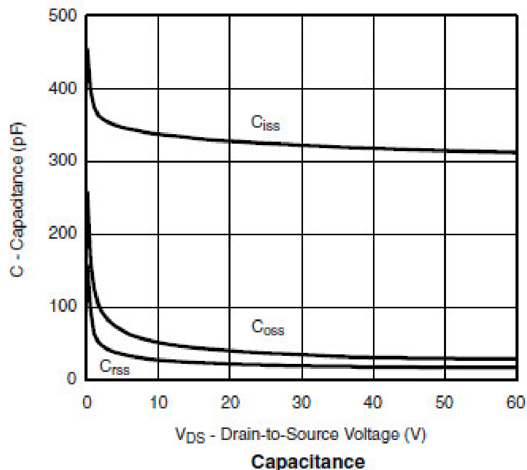
Output Characteristics



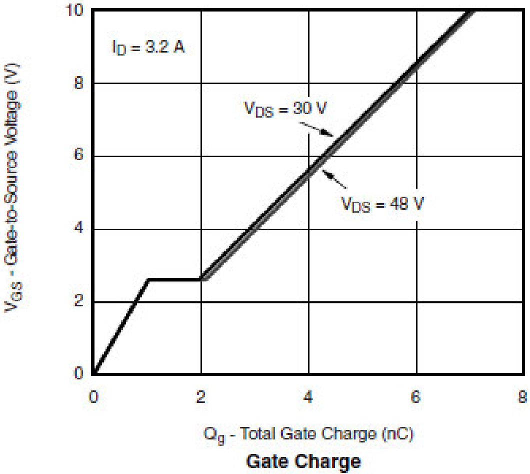
Transfer Characteristics



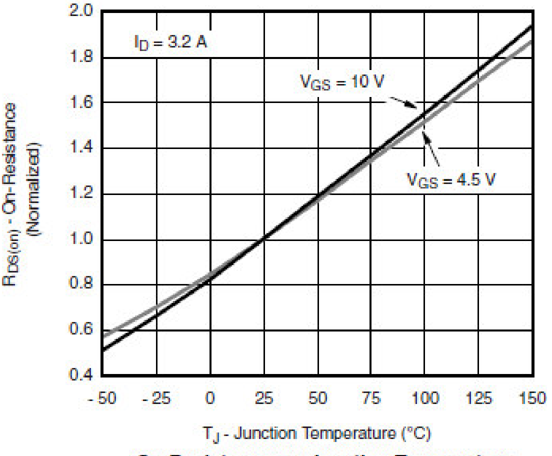
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

Typical Performance Characteristics (continue)

I_S - Source Current (A)

V_{SD} - Source-to-Drain Voltage (V)

T_J = 150 °C

T_J = 25 °C

Source-Drain Diode Forward Voltage

$R_{DS(on)}$ - On-Resistance (Ω)

V_{GS} - Gate-to-Source Voltage (V)

I_D = 3.2 A

125 °C

25 °C

On-Resistance vs. Gate-to-Source Voltage

$V_{GS(th)}$ (V)

T_J - Temperature (°C)

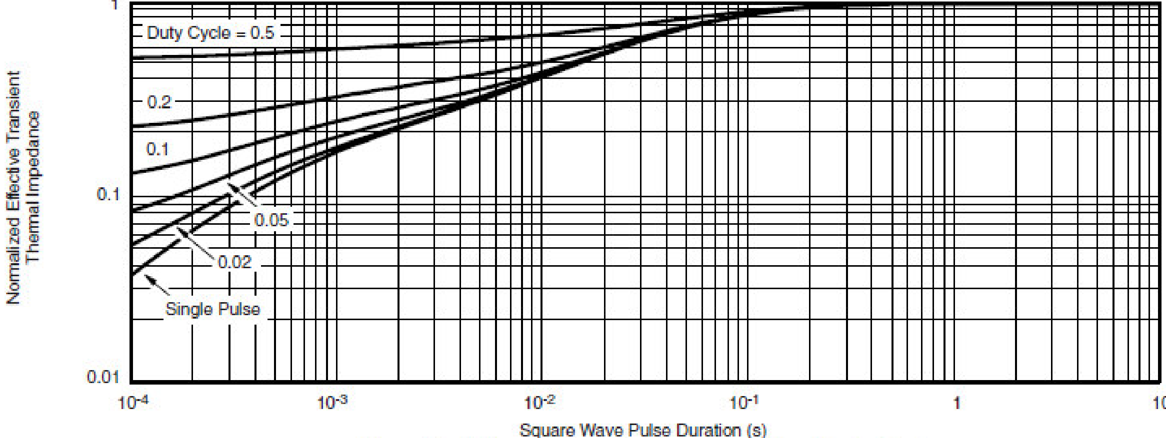
I_D = 250 µA

Threshold Voltage

Power (W)

Time (s)

Single Pulse Power (Junction-to-Ambient)

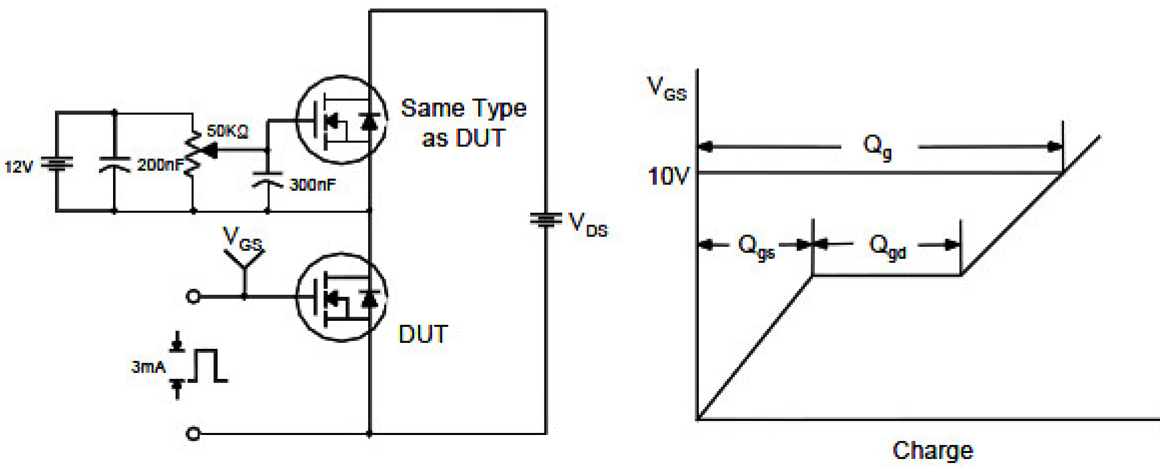


Normalized Thermal Transient Impedance, Junction-to-Foot

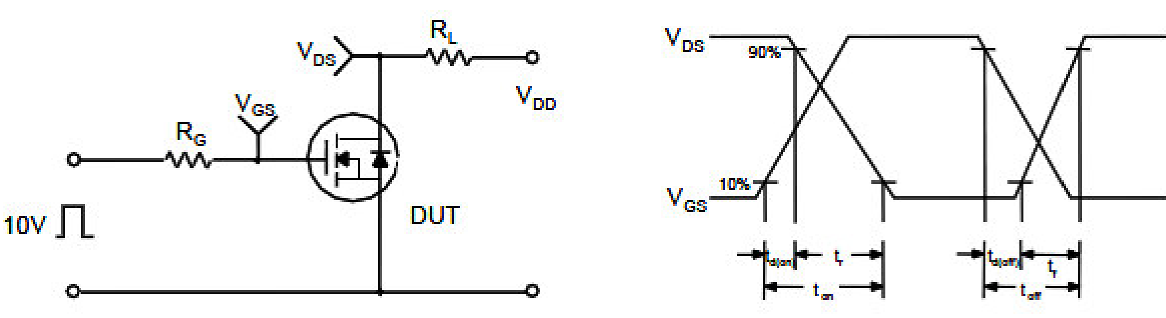
GSM3458

Typical Performance Characteristics (continue)

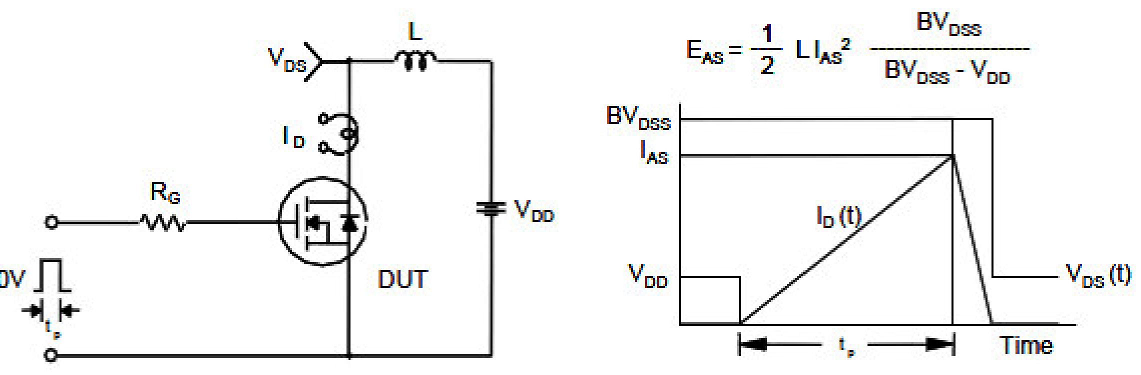
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



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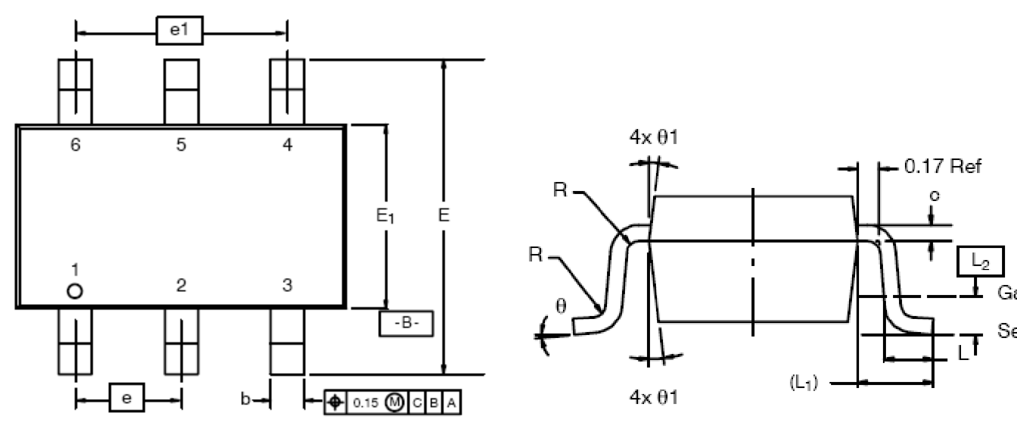
Package Dimension

TSOP-6



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A1	0.01	-	0.10	0.0004	-	0.004
A2	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E1	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e1	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L1	0.60 Ref			0.024 Ref		
L2	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0º	4º	8º	0º	4º	8º
θ1	7º Nom			7º Nom		

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