GSM3460

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM3460, 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.

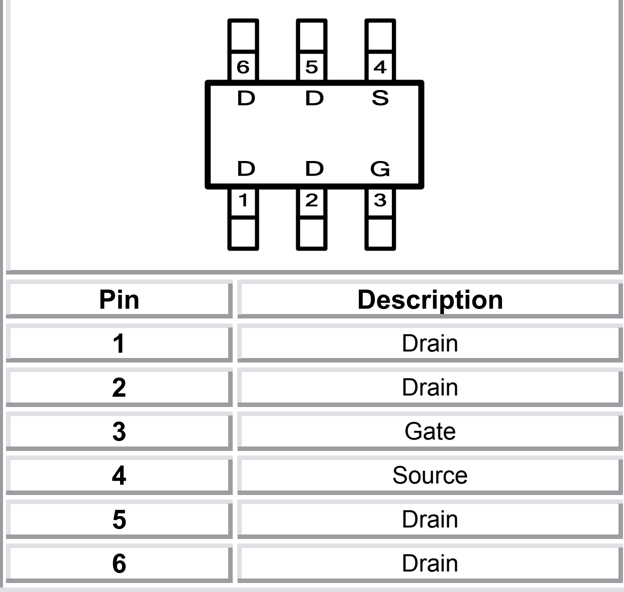
Features

- 20V/5.8A,$R_{DS(ON)}$=26mΩ@V_{GS}=4.5V
- 20V/4.2A,$R_{DS(ON)}$=30mΩ@V_{GS}=2.5V
- 20V/2.8A,$R_{DS(ON)}$=36mΩ@V_{GS}=1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

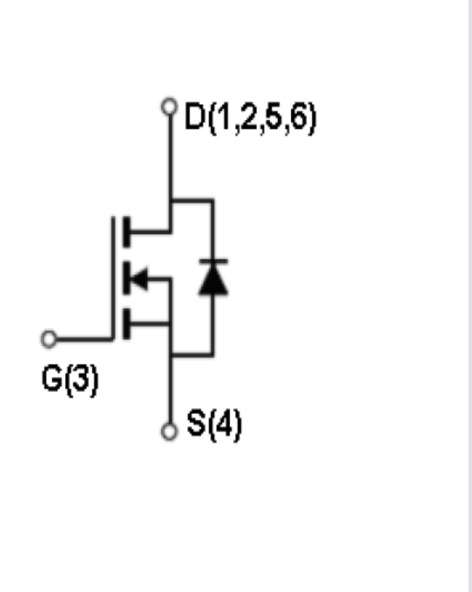
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

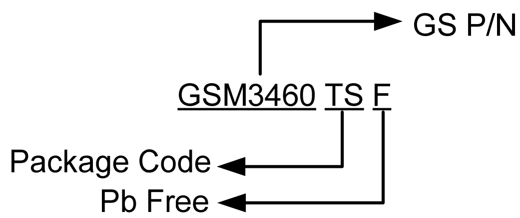
Packages & Pin Assignments



GSM3460TSF(TSOP-6)	
Pin	**Description**
1	Drain
2	Drain
3	Gate
4	Source
5	Drain
6	Drain

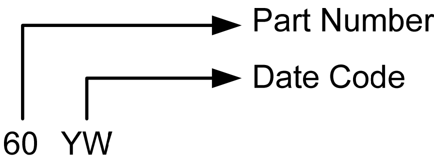


Ordering Information



Part Number	Package	Quantity Reel
GSM3460TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC, unless otherwise noted

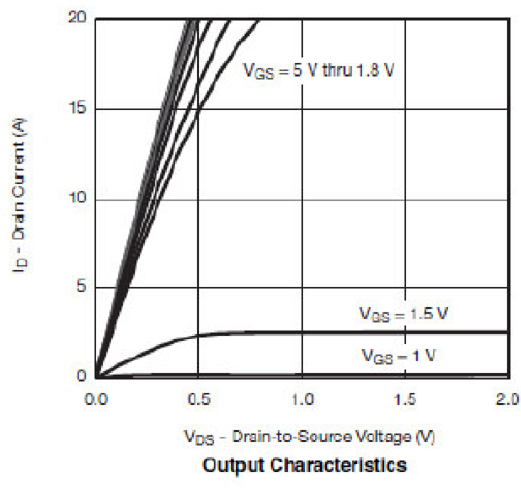
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current(T_J=150ºC)	T_A=25ºC	5.8	A
		T_A=70ºC	2.8	
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current(Diode Conduction)		1.6	A
P_D	Power Dissipation	T_A=25ºC	2.0	W
		T_A=70ºC	1.3	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{θJA}$	Thermal Resistance-Junction to Ambient		120	ºC/W

Electrical Characteristics

T_A=25ºC, unless otherwise noted

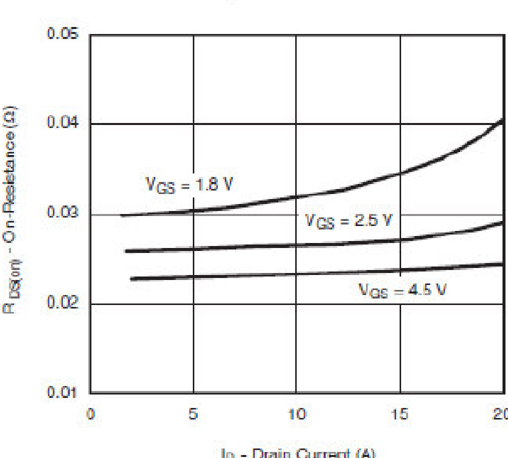
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.4		1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V,V_{GS}=0V			1	uA
		V_{DS}=16V,V_{GS}=0V, T_J=85ºC			10	uA
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geqq$5V,V_{GS}=4.5V	6			A
		$V_{DS}\geqq$5V,V_{GS}=2.5V	4			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V,I_D=5.8A		23	26	mΩ
		V_{GS}=2.5V,I_D=4.2A		27	30	mΩ
		V_{GS}=1.8V,I_D=2.8A		30	36	mΩ
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=5.0A		35		S
V_{SD}	Diode Forward Voltage	I_S=5.0A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V,I_D=5.0A		13	19	nC
Q_{gs}	Gate-Source Charge			2.8		nC
Q_{gd}	Gate-Drain Charge			2.0		nC
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V,f=1MHz		1050		pF
C_{oss}	Output Capacitance			235		pF
C_{rss}	Reverse Transfer Capacitance			115		pF
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, R_L=1.3Ω,I_D=5.0A, V_{GEN}=10V,R_G=1Ω		10	20	ns
t_r				10	20	ns
$t_{d(off)}$	Turn-Off Time			25	40	ns
t_f				10	20	ns

Typical Performance Characteristics

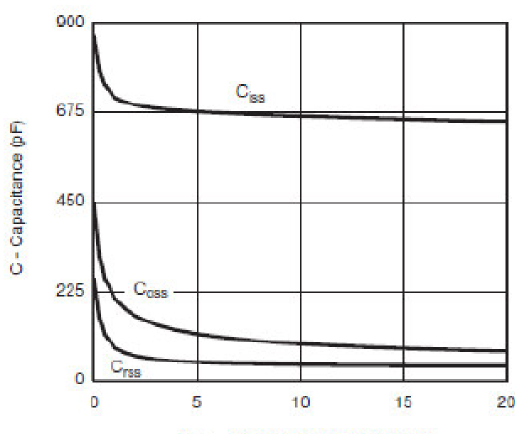


Output Characteristics

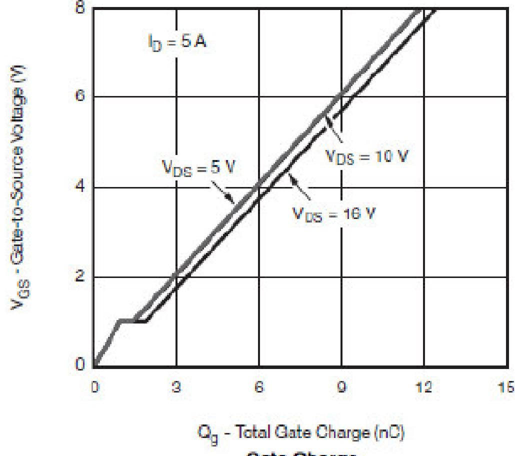
Transfer Characteristics



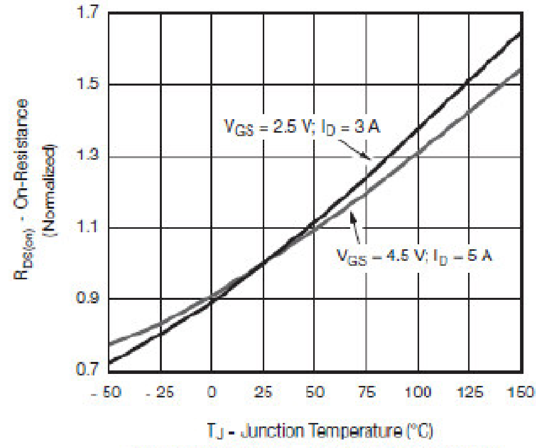
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature

GSM3460

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 = 5 A

T_J = 125 °C

T_J = 25 °C

On-Resistance vs. Gate-to-Source Voltage

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

T_J - Temperature (°C)

I_D = 5 mA

I_D = 250 µA

Threshold Voltage

Power (W)

Time (s)

Single Pulse Power (Junction-to-Ambient)

Normalized Effective Transient Thermal Impedance

Square Wave Pulse Duration (s)

Duty Cycle = 0.5

0.2

0.1

0.05

0.02

Single Pulse

Notes:

P_{DM}

t_1

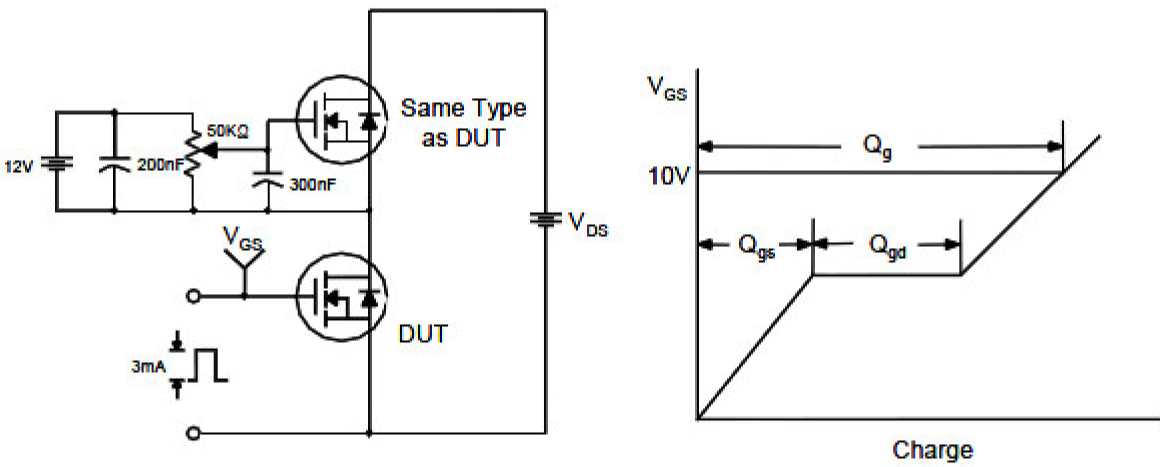
t_2

1. Duty Cycle, $D = \frac{t_1}{t_2}$
2. Per Unit Base = $R_{\theta JA}$ = 120 °C/W
3. $T_{JM} - T_A = P_{DM} Z_{\theta JA}^{(t)}$
4. Surface Mounted

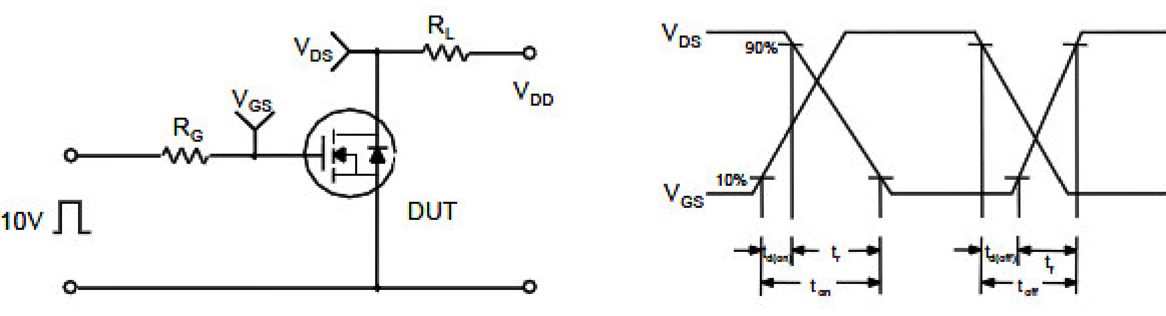
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Performance Characteristics (continue)

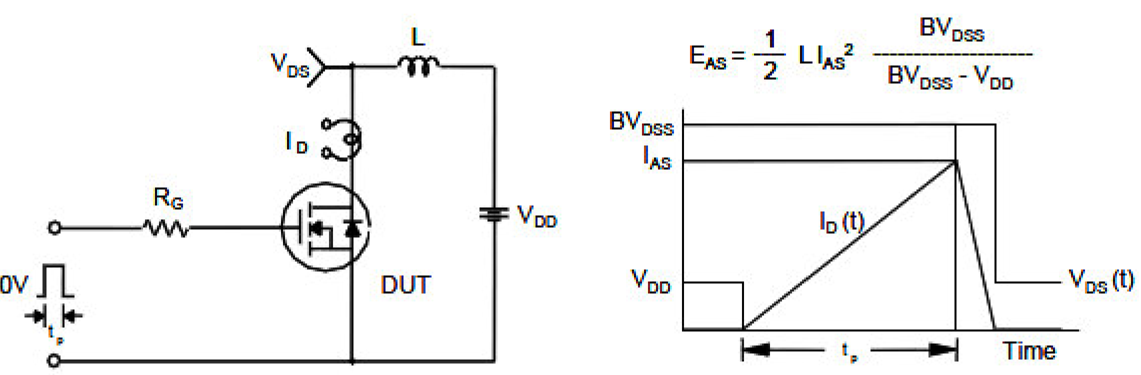
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

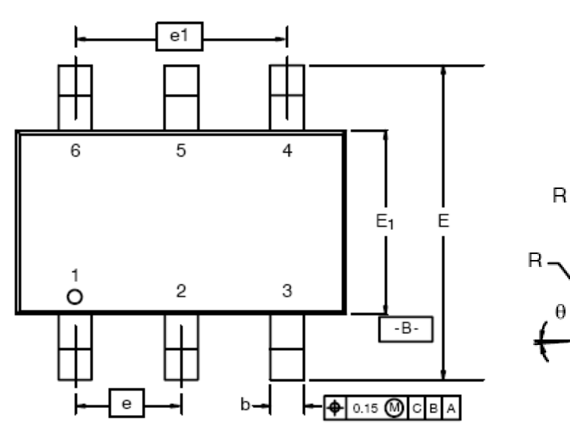


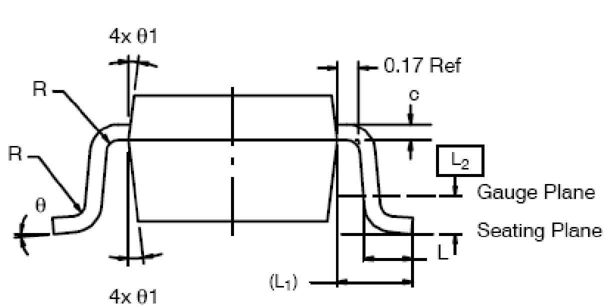
Unclamped Inductive Switching Test Circuit & Waveforms



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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