GSM9576

60V P-Channel Enhancement Mode MOSFET

Product Description

GSM9576, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

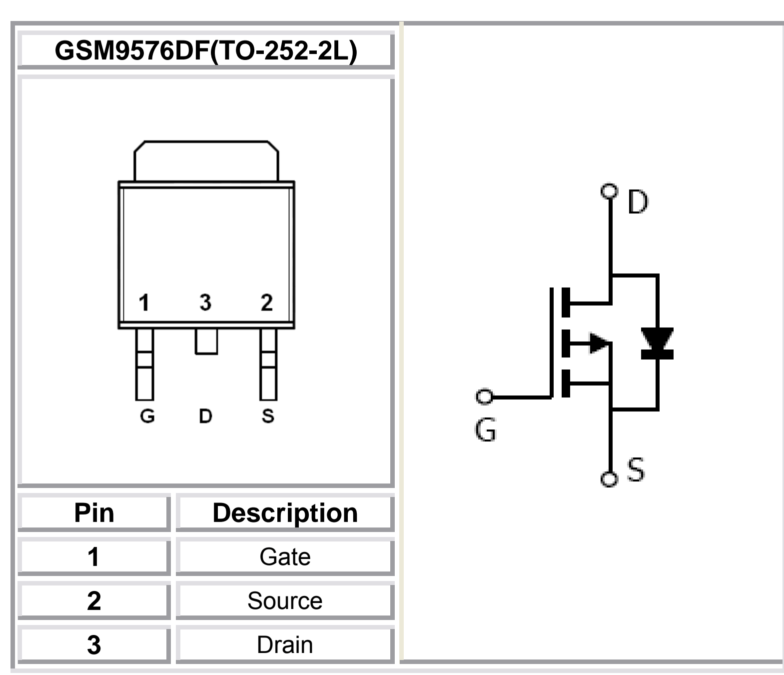
Features

- -60V/-14A,$R_{DS(ON)}$=115mΩ@V_{GS}=-10V
- -60V/-10A,$R_{DS(ON)}$=125mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- TO-252-2L package design

Applications

- Backlight Inverter for LCD Display
- Full Bridge DC/DC Converter
- LED Display
- Load Switch
- CCFL Inverter

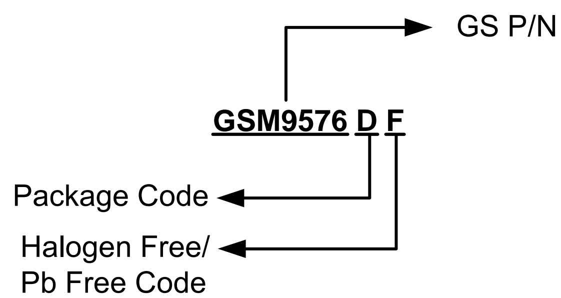
Packages & Pin Assignments



Pin	Description
1	Gate
2	Source
3	Drain

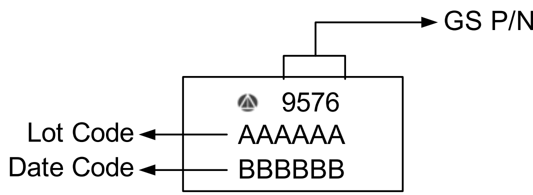
GSM9576

Ordering Information



Part Number	Package	Quantity Reel
GSM9576DF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC 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℃)	T_A=25ºC	-14	A
		T_A=70ºC	-10	
I_{DM}	Pulsed Drain Current		-30	
I_S	Continuous Source Current(Diode Conduction)		-8	
I_{AS}	Single Pulse Avalanche Current	L = 0.1 mH	-12	
E_{AS}	Avalanche Energy		23	mJ
P_D	Power Dissipation	T_A=25ºC	40	W
		T_A=70ºC	15	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	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	-60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-0.8		-2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±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			-20	uA
$I_{D(on)}$	On-State Drain Current	V_{DS}≦-5V, V_{GS}=-10V	-20			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-10V,I_D=-14A		105	115	mΩ
		V_{GS}=-4.5V,I_D=-10A		110	125	mΩ
g_{FS}	Forward Transconductance	V_{DS}=-15V,I_D=-3.2A		12		S
V_{SD}	Diode Forward Voltage	I_S=-2A,V_{GS}=0V		-0.8	-1.2	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=-30V, V_{GS}=0V,f=1MHz		980		pF
C_{oss}	Output Capacitance			110		pF
C_{rss}	Reverse Transfer Capacitance			45		pF
Q_g	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V,I_D=-4A		12	20	nC
Q_{gs}	Gate-Source Charge			2.5		nC
Q_{gd}	Gate-Drain Charge			3.5		nC
$t_{d(on)}$	Turn-On Time	V_{DD}=-30V, R_L=7.5Ω,I_D=-3.8A, V_{GEN}=-10V,R_G=3Ω		10	20	ns
t_r				6	10	ns
$t_{d(off)}$	Turn-Off Time			30	45	ns
t_f				12	25	ns

Typical Performance Characteristics

V_{GS} =-10 V thru-5 V
V_{GS} =-4 V
V_{GS} =-3 V
$-I_D$ - Drain Current (A)
$-V_{DS}$ - Drain-to-Source Voltage (V)

Output Characteristics

T_C = 25 °C
T_C = 150 °C
T_C = - 55 °C
$-I_D$ - Drain Current (A)
$-V_{GS}$ - Gate-to-Source Voltage (V)

Transfer Characteristics

V_{GS} =-4.5 V
V_{GS} =-10 V
$R_{DS(on)}$ - On-Resistance (Ω)
$-I_D$ - Drain Current (A)

On-Resistance vs. Drain Current

C_{iss}
C_{oss}
C_{rss}
C - Capacitance (pF)
$-V_{DS}$ - Drain-to-Source Voltage (V)

Capacitance

I_D =-3.2 A
V_{DS} =-30 V
$-V_{GS}$ - Gate-to-Source Voltage (V)
Q_g - Total Gate Charge (nC)

Gate Charge

I_D =-3.2 A
V_{GS} =-10 V
V_{GS} =-4.5 V
$R_{DS(on)}$ - On-Resistance (Normalized)
T_J - Junction Temperature (°C)

On-Resistance vs. Junction Temperature

Typical Performance Characteristics **(continue)**

Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

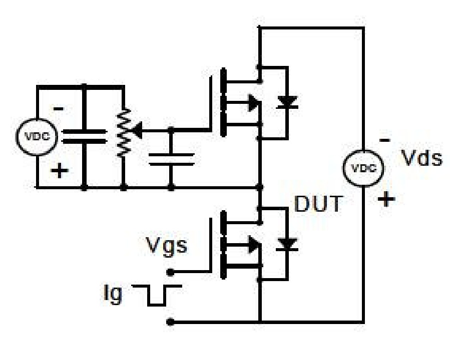
Threshold Voltage

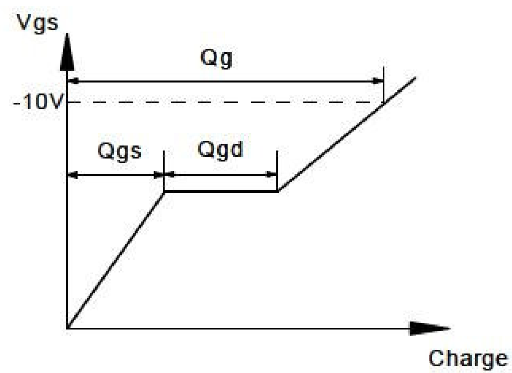
Single Pulse Power, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Ambient

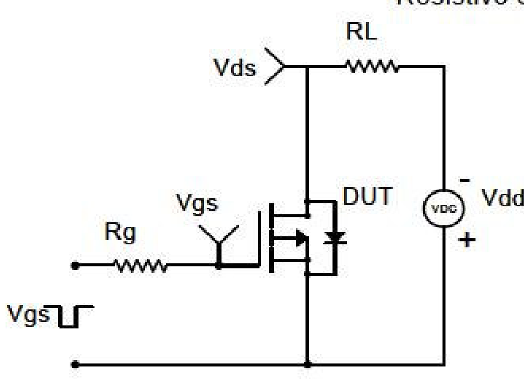
Typical Characteristics

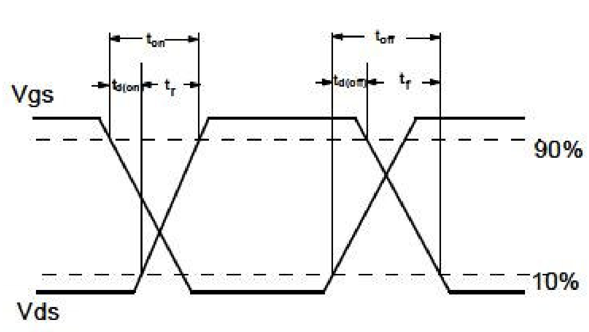
Gate Charge Test Circuit & Waveform



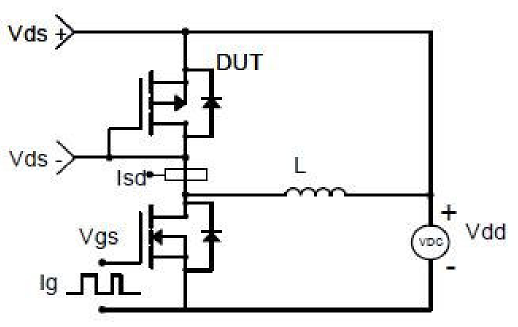


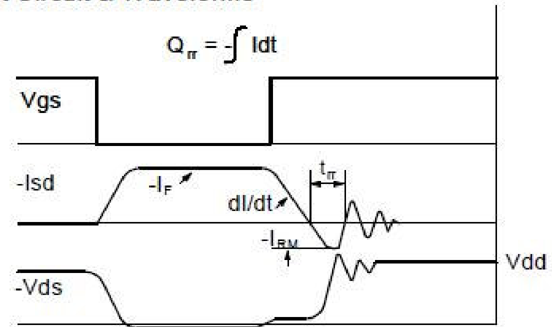
Resistive Switching Test Circuit & Waveforms





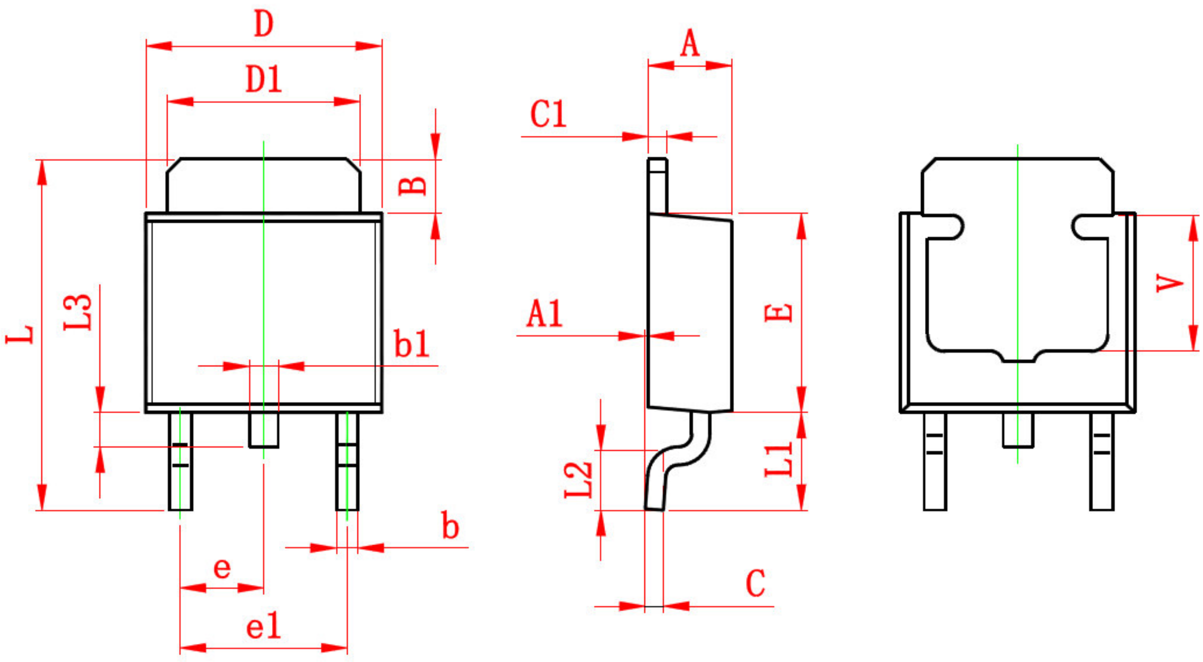
Diode Recovery Test Circuit & Waveforms





Package Dimension

TO-252-2L PLASTIC PACKAGE



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	3.800 REF		0.150 REF	

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