

GSM9971B

60V N-Channel Enhancement Mode MOSFET

Product Description

GSM9971B, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

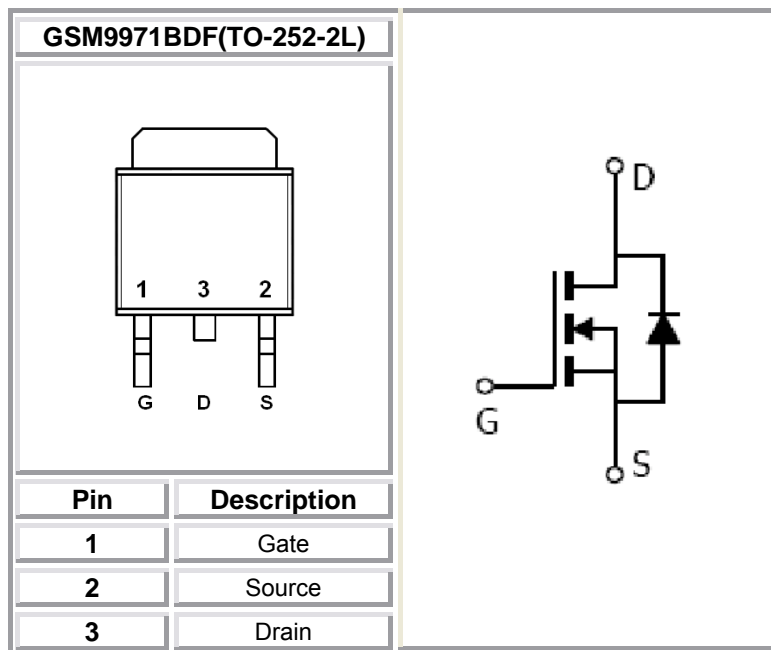
Features

- 60V/18A, $R_{DS(ON)}=56m\Omega@V_{GS}=10V$
- 60V/12A, $R_{DS(ON)}=62m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

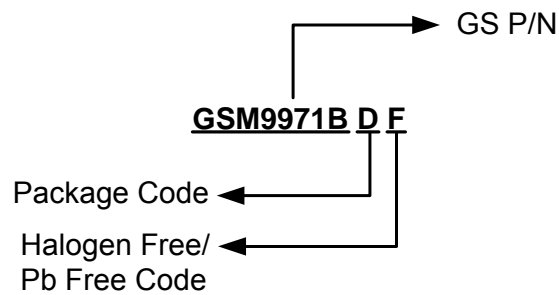
Applications

- Motor and Load Control
- Power Management in White LED System
- Push Pull Converter
- LCD TV Inverter & AD/DC Inverter Systems.

Packages & Pin Assignments

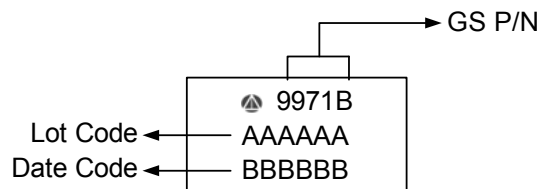


Ordering Information



Part Number	Package	Quantity Reel
GSM9971BDF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C unless otherwise noted

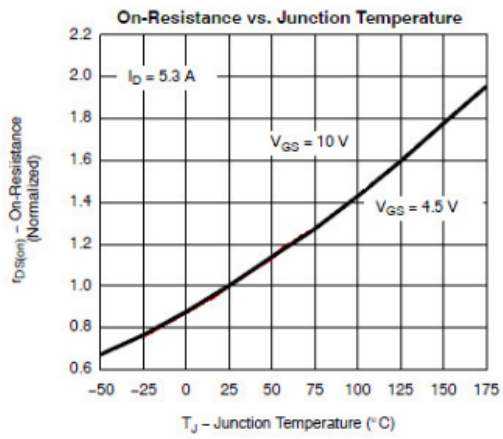
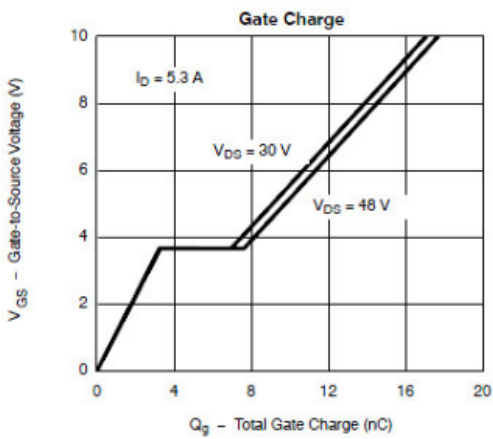
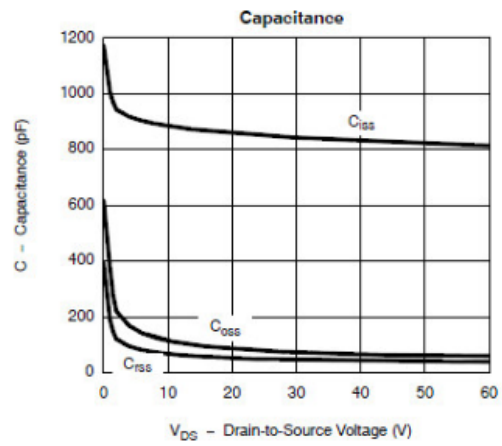
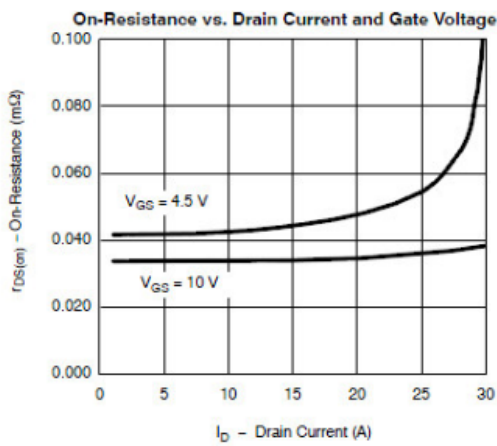
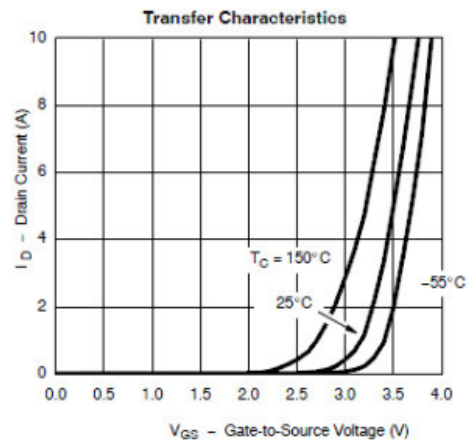
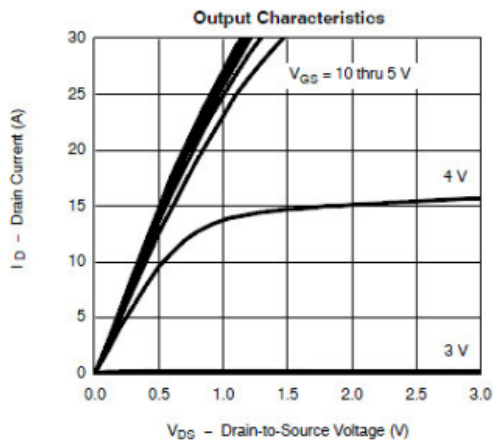
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	60	V
V _{GSS}	Gate –Source Voltage	±20	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	25
		T _A =70°C	16
I _{DM}	Pulsed Drain Current	60	A
I _S	Continuous Source Current(Diode Conduction)	12	
I _{AS}	Single Pulse Avalanche Current	15	
P _D	Power Dissipation	T _A =25°C	40
		T _A =70°C	15
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	62.5	°C/ W

Electrical Characteristics

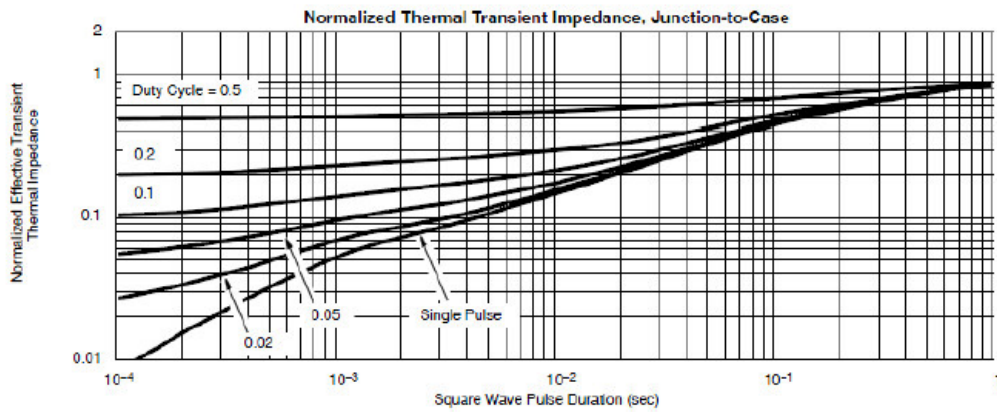
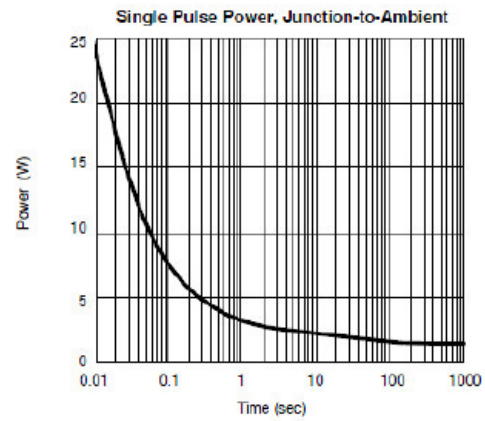
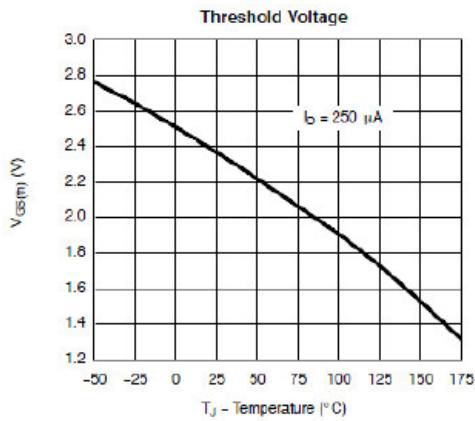
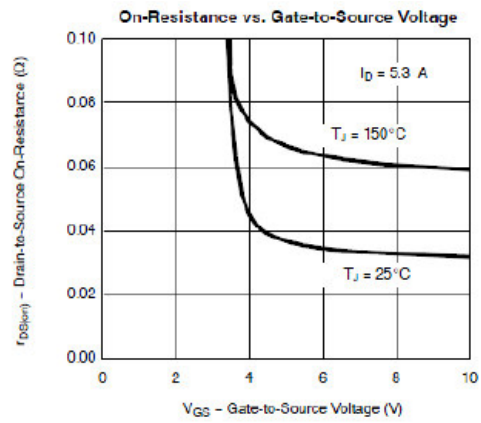
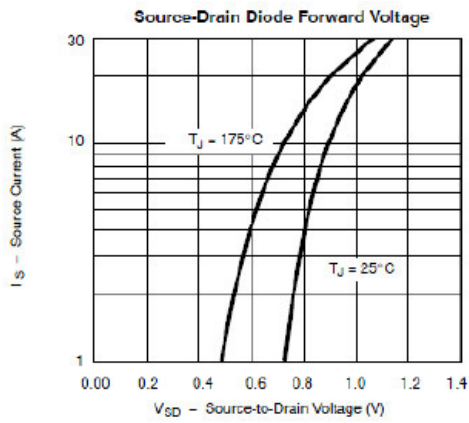
T_A=25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =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} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V			1	uA
		V _{DS} =60V, V _{GS} =0V, T _J =85°C			5	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	30			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =18A		48	56	mΩ
		V _{GS} =4.5V, I _D =12A		54	62	
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =5.3A		24		S
V _{SD}	Diode Forward Voltage	I _S =2.0A, V _{GS} =0V		0.8	1.2	V
Dynamic						
C _{iSS}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz		850		pF
C _{oSS}	Output Capacitance			80		
C _{rSS}	Reverse Transfer Capacitance			45		
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =5V, I _D =5.6A		8	15	nC
Q _{gs}	Gate-Source Charge			3.2		
Q _{gd}	Gate-Drain Charge			3.2		
t _{d(on)}	Turn-On Time	V _{DD} =30V, R _L =6.8Ω, I _D =5.0A, V _{GEN} =4.5V, R _G =6Ω		10	15	ns
t _r				12	20	
t _{d(off)}	Turn-Off Time			25	35	
t _f				10	15	

Typical Performance Characteristics

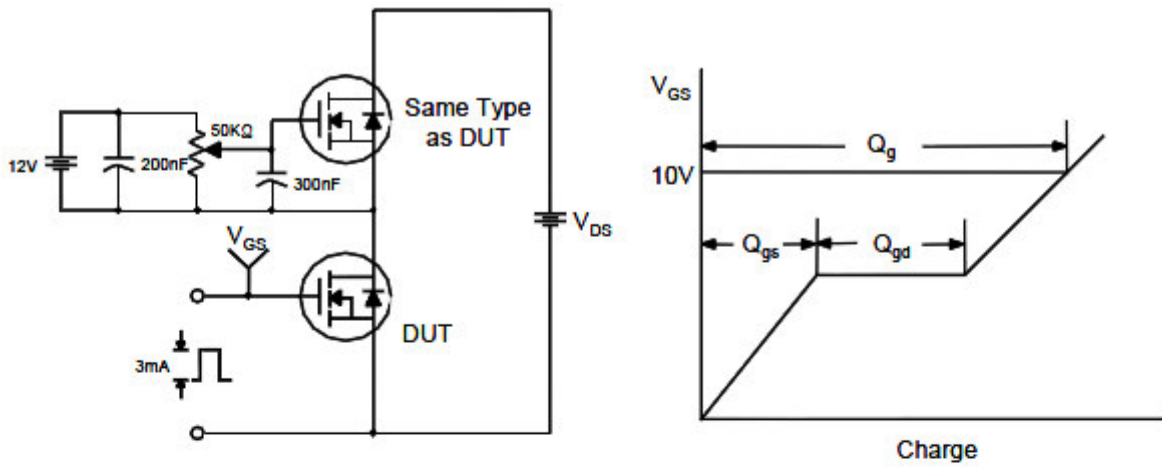


Typical Performance Characteristics (continue)

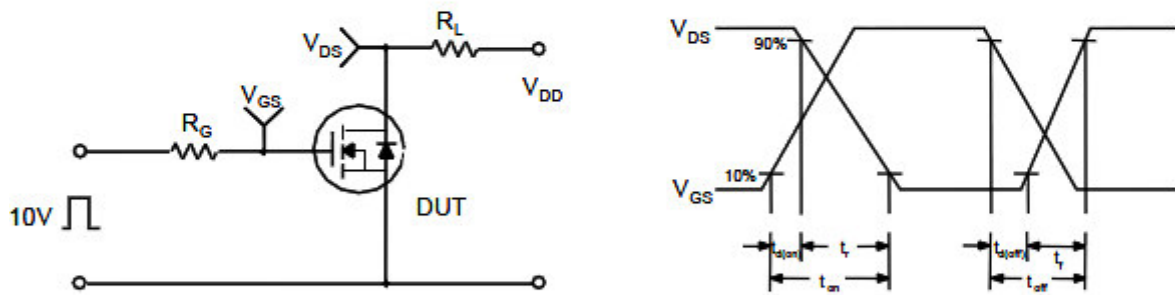


Typical Performance Characteristics (continue)

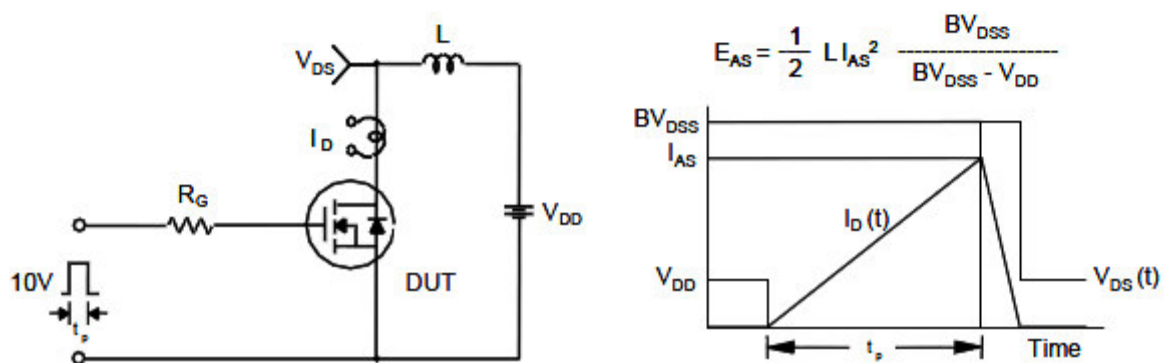
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

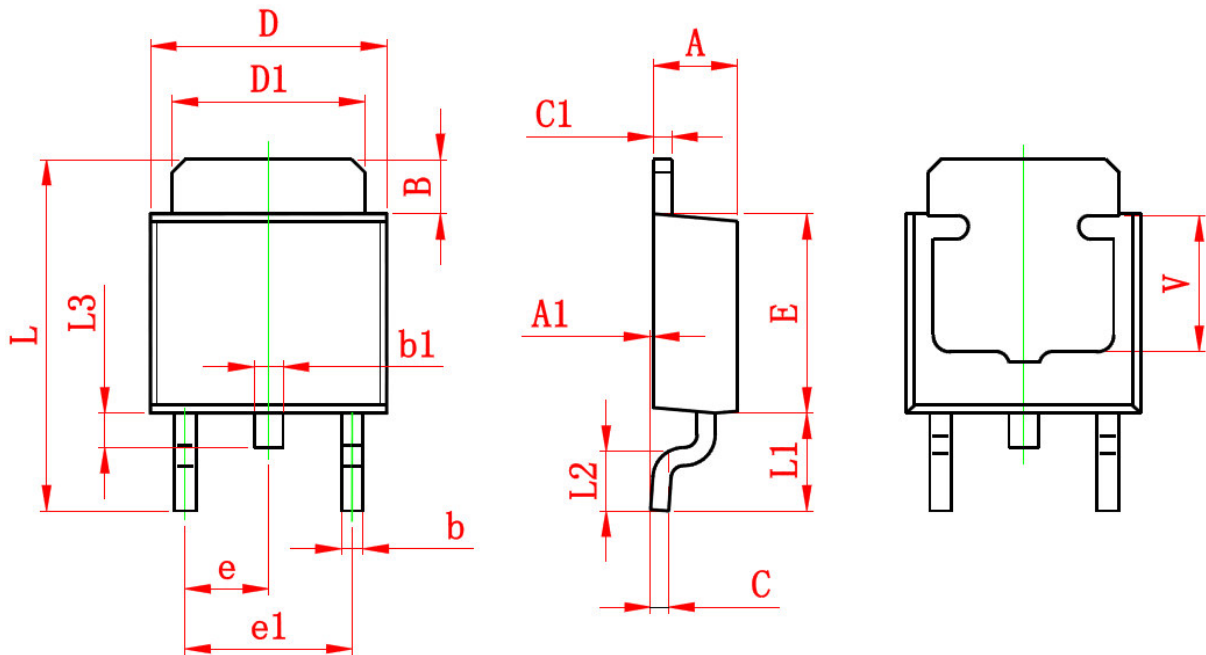


Unclamped Inductive Switching Test Circuit & Waveforms



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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