

GSM9990S

60V N-Channel Enhancement Mode MOSFET

Product Description

GSM9990S, 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.

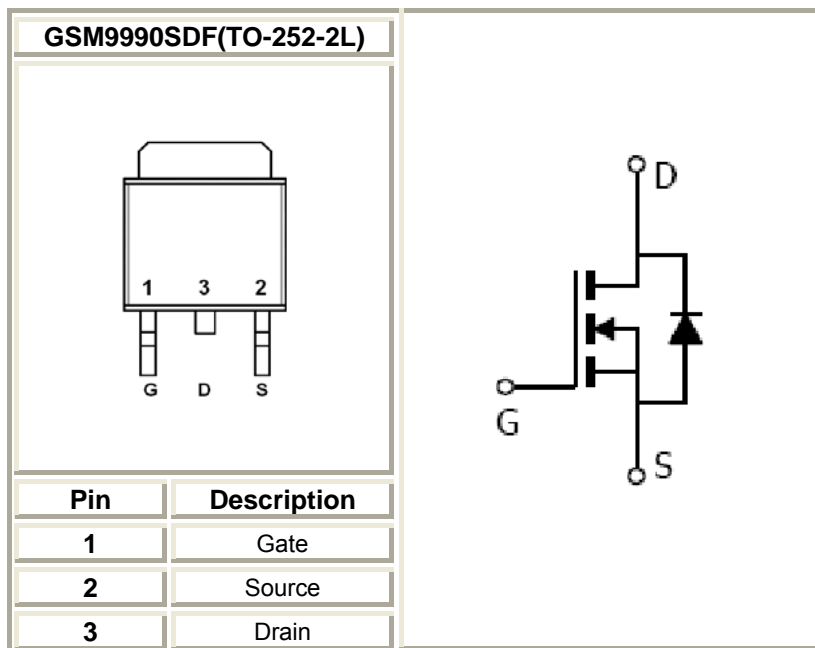
Features

- 60V/40A, $R_{DS(ON)}=7.8m\Omega@V_{GS}=10V$
- 60V/25A, $R_{DS(ON)}=9.8m\Omega@V_{GS}=6V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

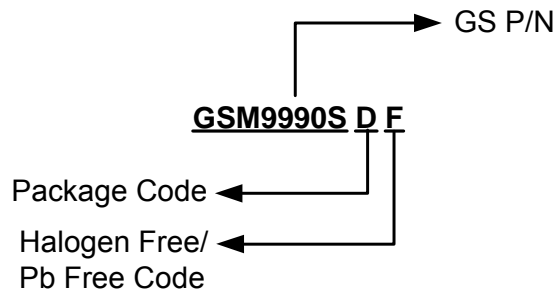
Applications

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

Packages & Pin Assignments

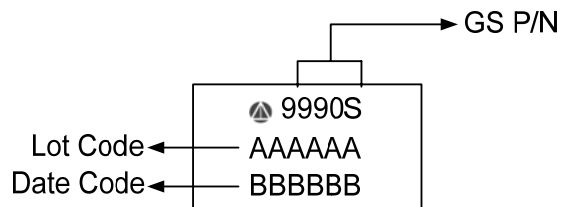


Ordering Information



Part Number	Package	Quantity Reel
GSM9990SDF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

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

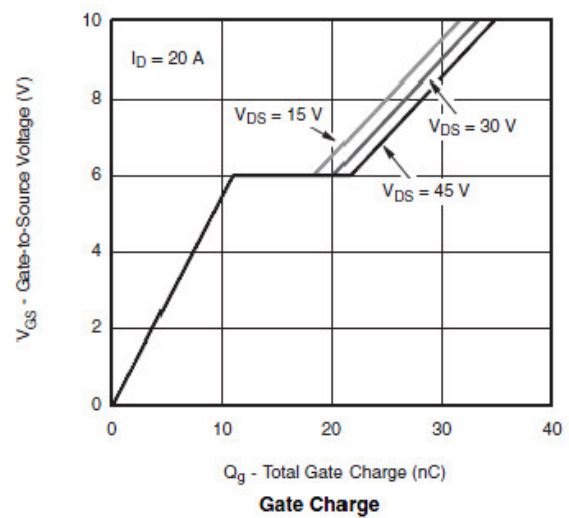
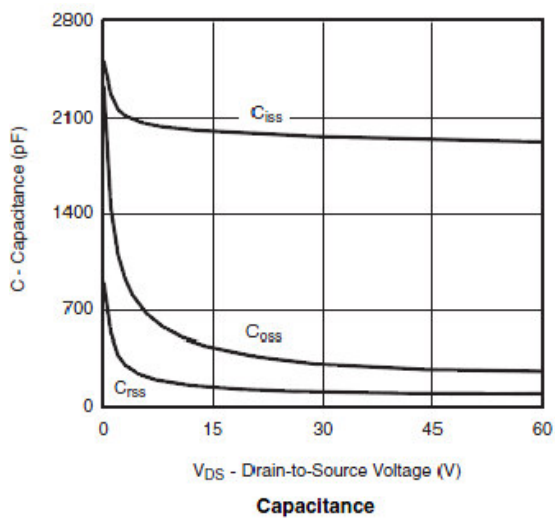
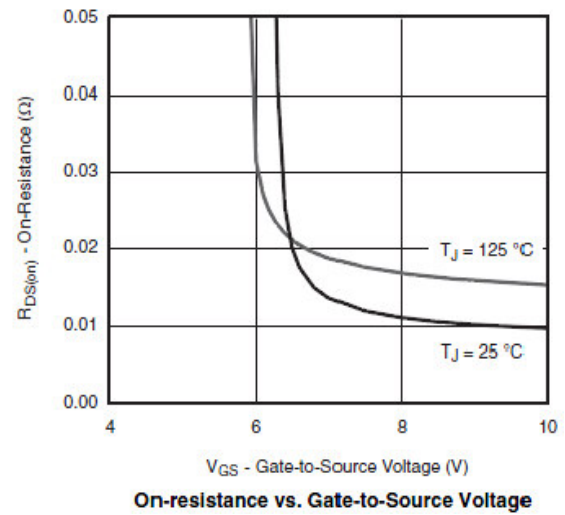
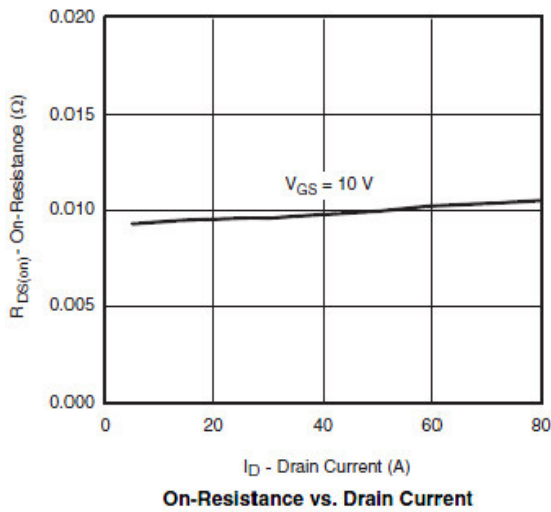
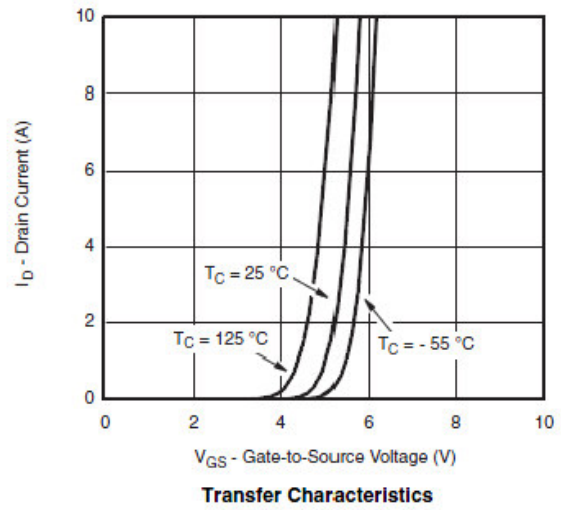
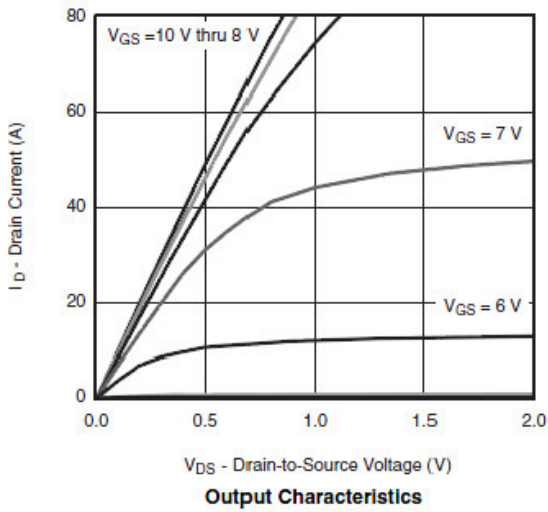
Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	60	V
V_{GSS}	Gate –Source Voltage	± 20	V
I_D	Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_A=25^{\circ}\text{C}$	60
		$T_A=70^{\circ}\text{C}$	40
I_{DM}	Pulsed Drain Current	100	A
I_S	Continuous Source Current(Diode Conduction)	60	A
P_D	Power Dissipation	$T_A=25^{\circ}\text{C}$	40
		$T_A=70^{\circ}\text{C}$	15
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	62.5	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

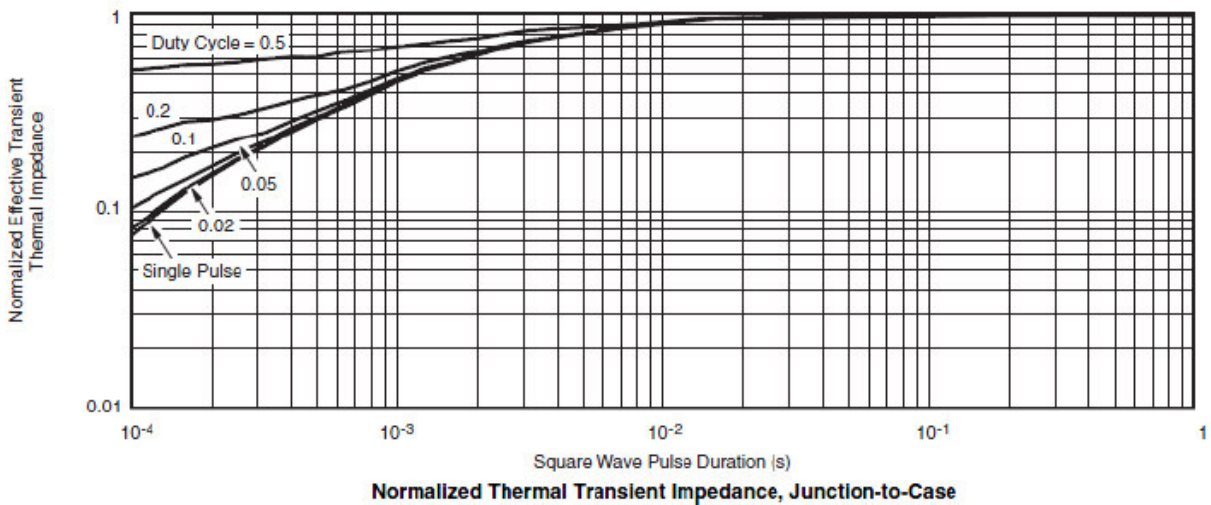
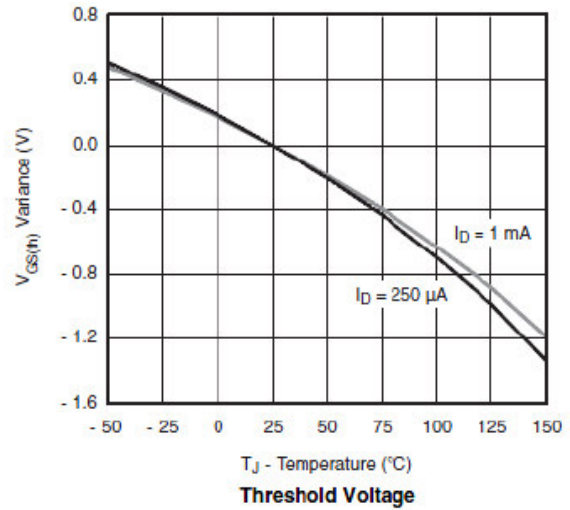
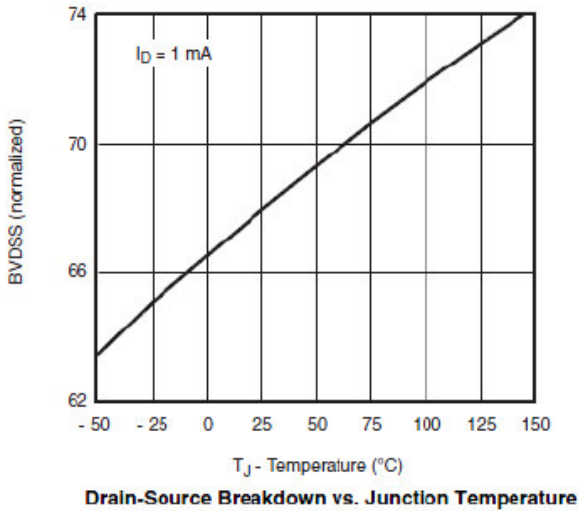
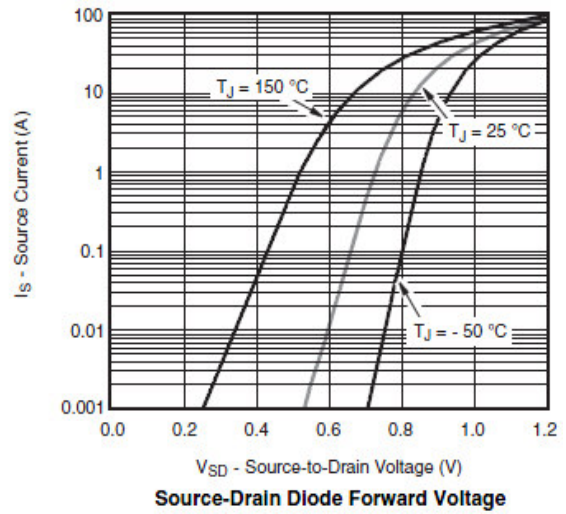
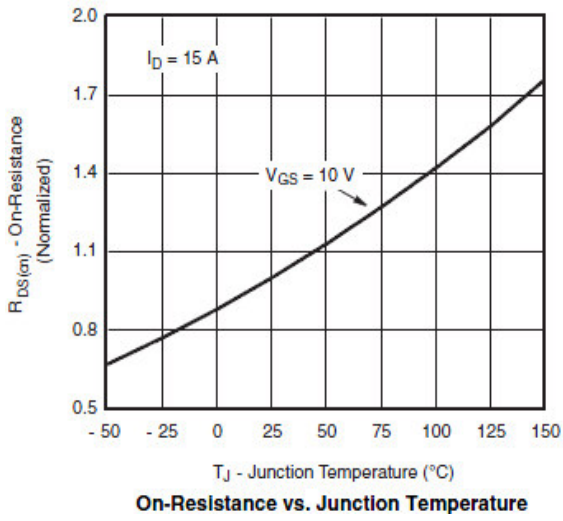
T_A=25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	65			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2.0		4.0	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 =85°C			30	
I _{D(on)}	On-State Drain Current	V _{DS} ≥10V, V _{GS} = 10V	80			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =40A		7.26	7.8	mΩ
		V _{GS} =6V, I _D =25A		8.63	9.8	
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =15A		38		S
V _{SD}	Diode Forward Voltage	I _S =40A, V _{GS} =0V		0.8	1.3	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz		2080		pF
C _{oss}	Output Capacitance			320		
C _{rss}	Reverse Transfer Capacitance			120		
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _D =20A		35	60	nC
Q _{gs}	Gate-Source Charge			12		
Q _{gd}	Gate-Drain Charge			10		
t _{d(on)}	Turn-On Time	V _{DD} =30V, R _L =1.53Ω, I _D =20A, V _{GEN} =10V, R _G =1.0Ω		10	20	ns
t _r				10	20	
t _{d(off)}	Turn-Off Time			15	30	
t _f				10	20	

Typical Performance Characteristics

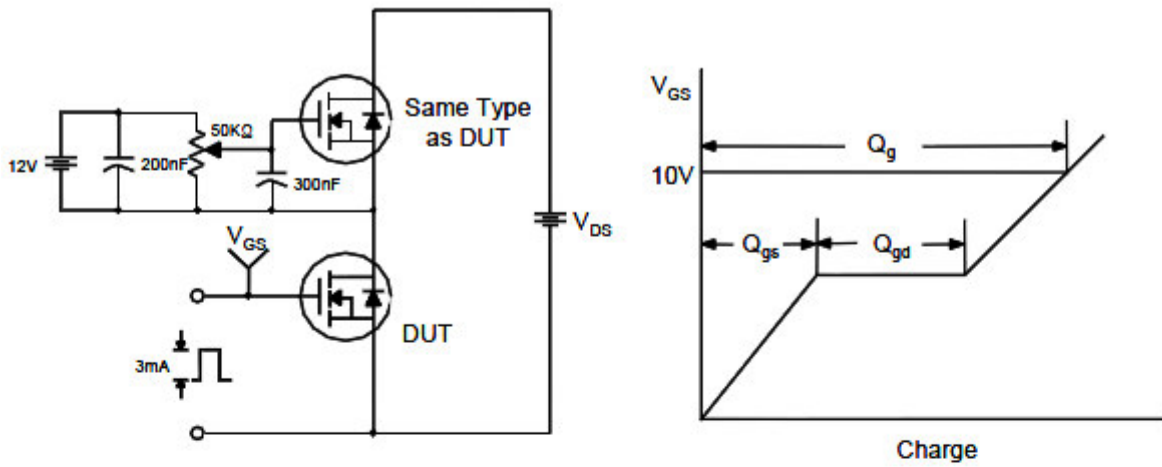


Typical Performance Characteristics (continue)

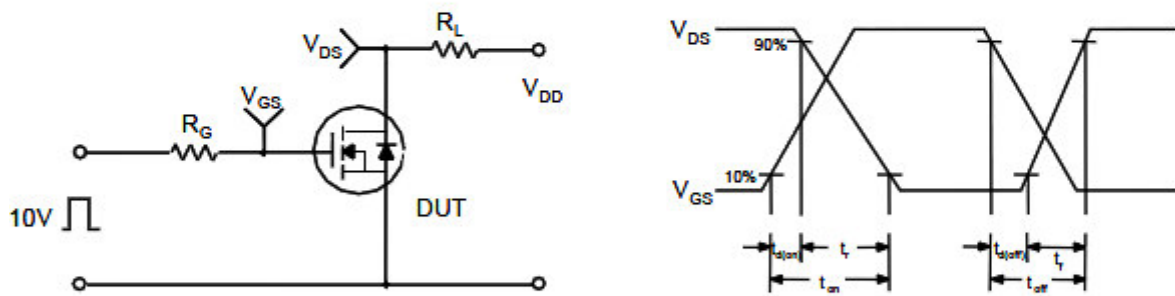


Typical Performance Characteristics (continue)

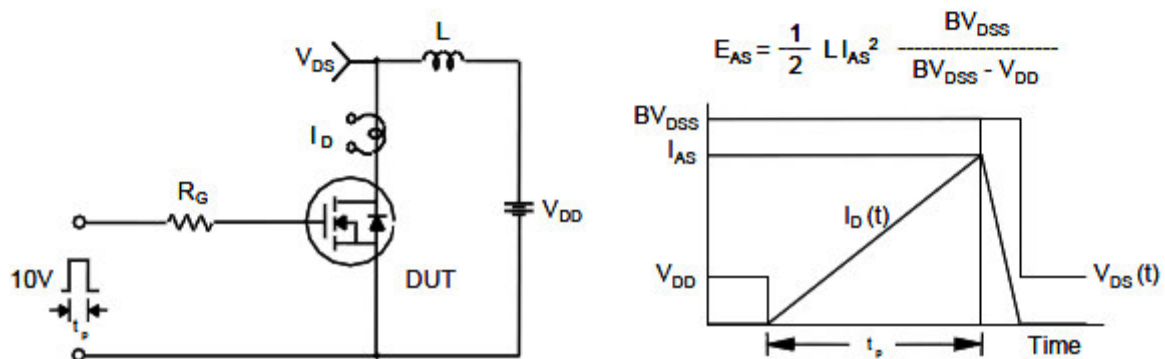
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

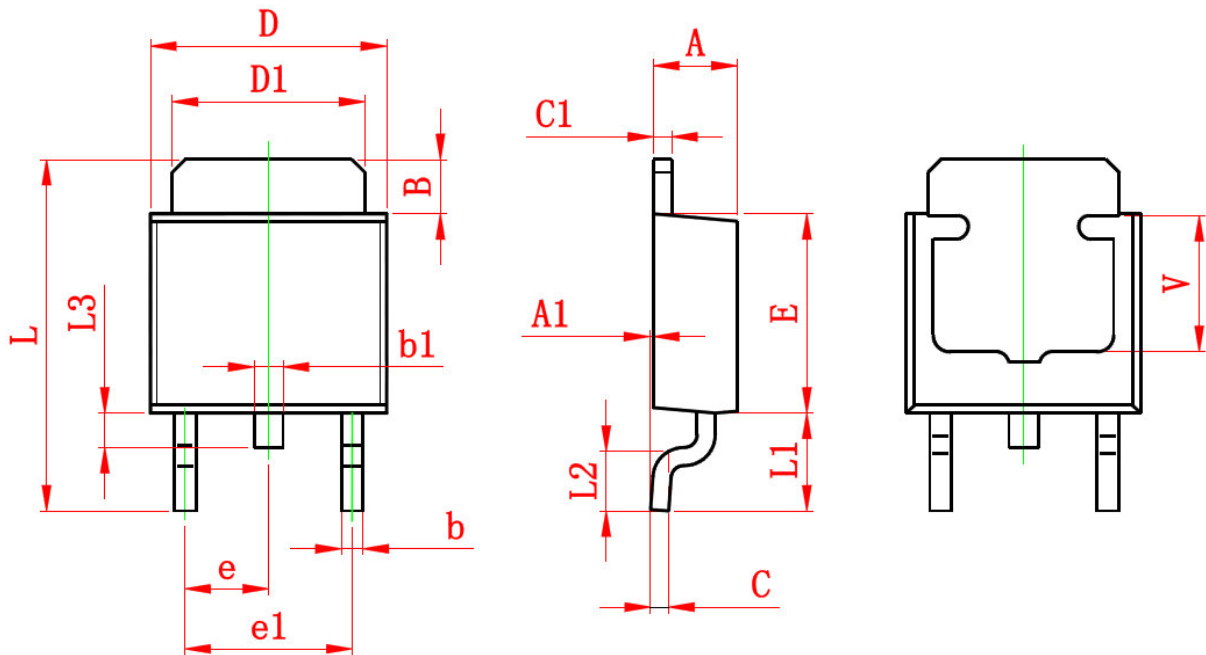


Unclamped Inductive Switching Test Circuit & Waveforms



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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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
	sales_cn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587