

GSM5004S

40V N-Channel Enhancement Mode MOSFET

Product Description

GSM5004S, 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.

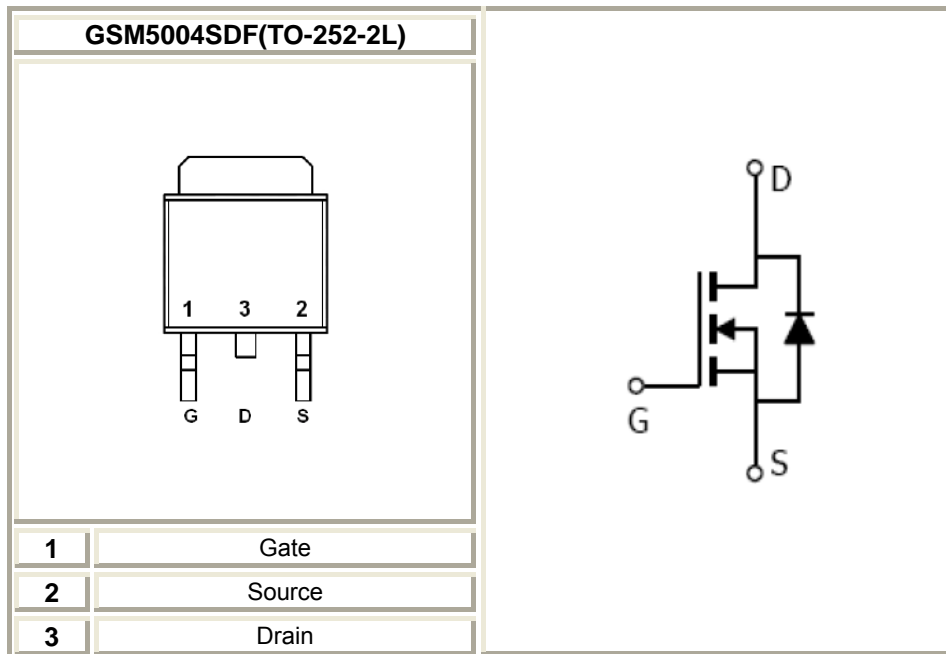
Features

- 40V/20A, $R_{DS(ON)} = 5.5m\Omega @ V_{GS} = 10V$
- 40V/15A, $R_{DS(ON)} = 6.5m\Omega @ V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- TO-252-2L package design

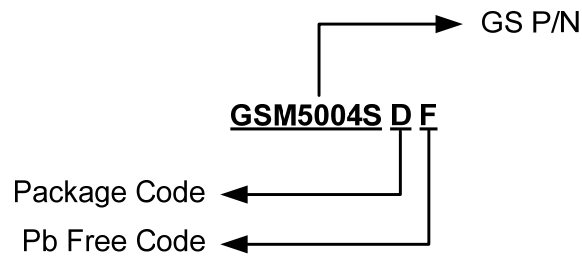
Applications

- Backlight Inverter for LCD Display
- DC/DC Converters

Packages & Pin Assignments

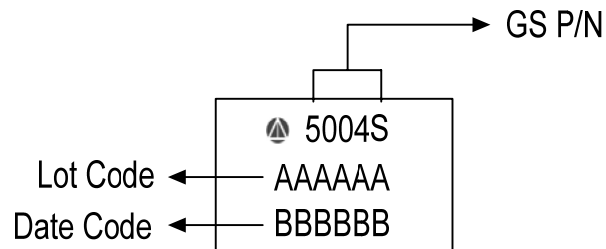


Ordering Information



Part Number	Package	Quantity Reel
GSM5004SDF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

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

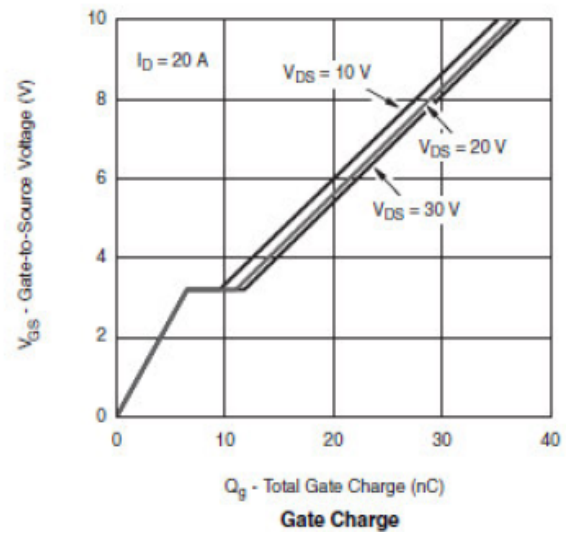
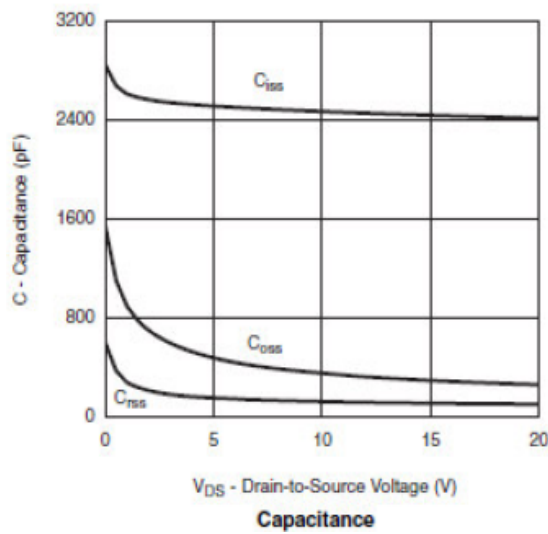
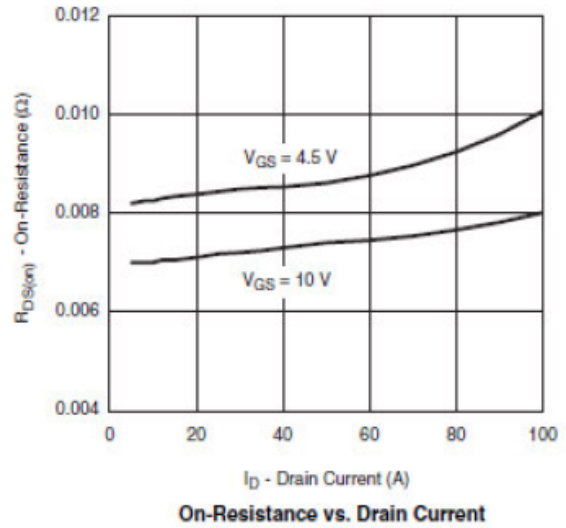
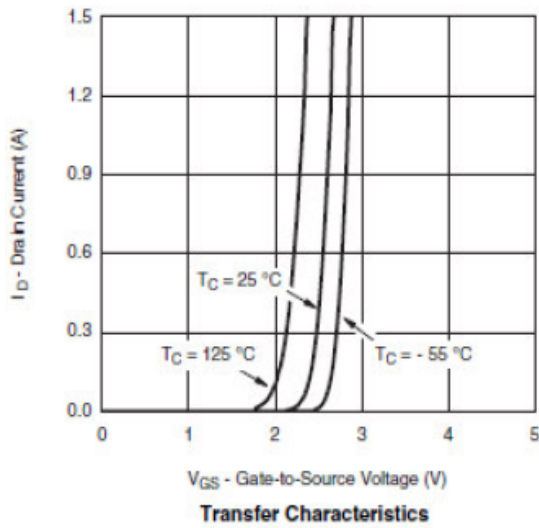
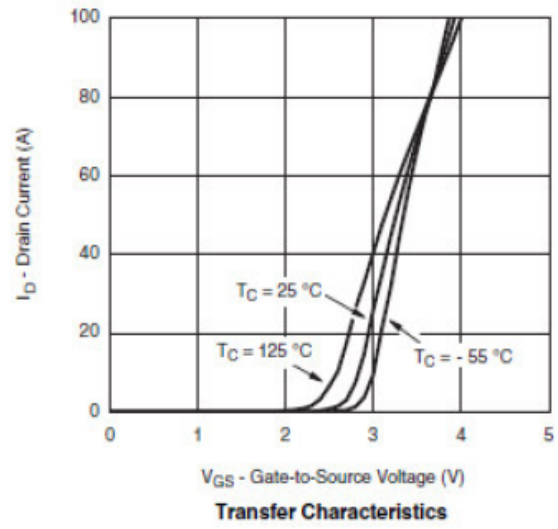
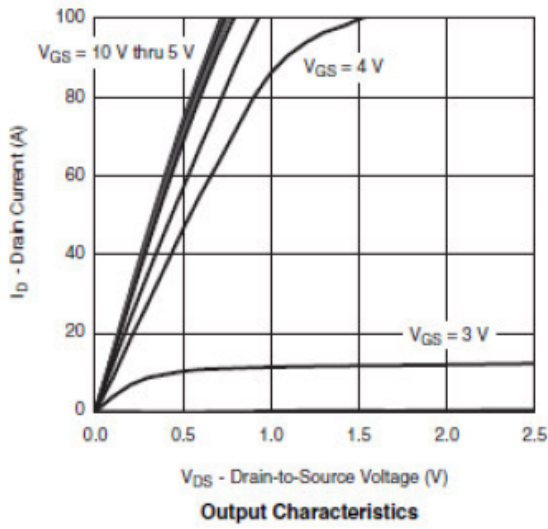
Symbol	Parameter	Typical	Unit	
V_{DSS}	Drain-Source Voltage	40	V	
V_{GSS}	Gate –Source Voltage	± 20	V	
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_A=25^\circ\text{C}$	15	A
		$T_A=70^\circ\text{C}$	12	
I_{DM}	Pulsed Drain Current	40	A	
I_S	Continuous Source Current(Diode Conduction)	2.6	A	
I_{AS}	Single Pulse Avalanche Current	L=0.1mH	25	A
E_{AS}	Avalanche Energy		35	mJ
P_D	Power Dissipation	$T_A=25^\circ\text{C}$	40	W
		$T_A=70^\circ\text{C}$	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

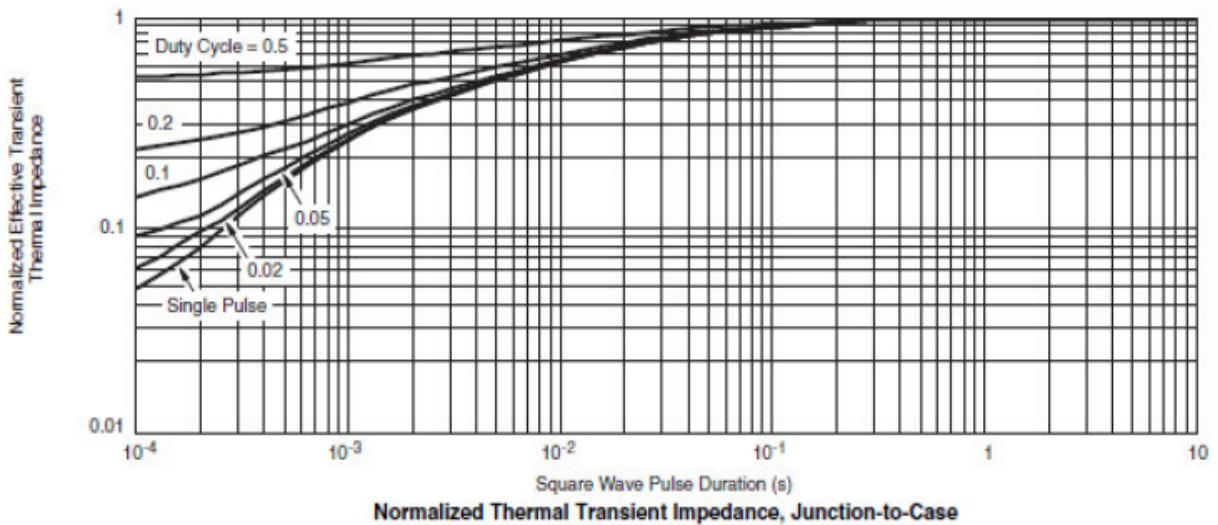
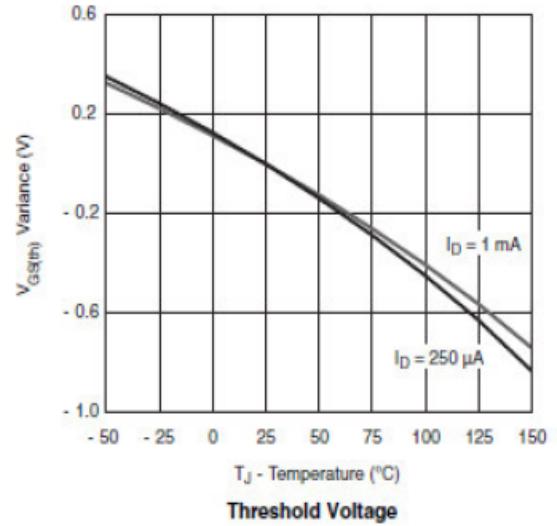
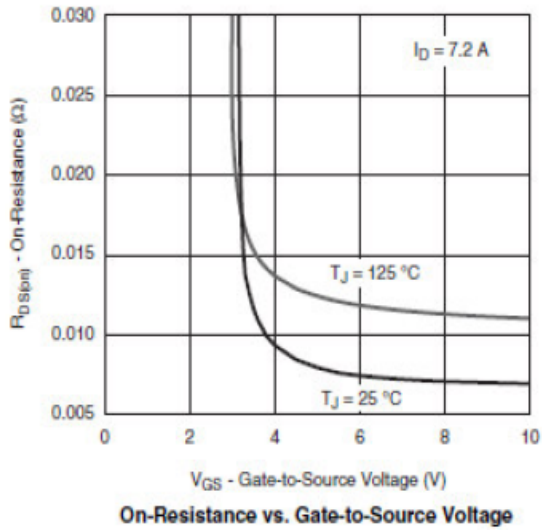
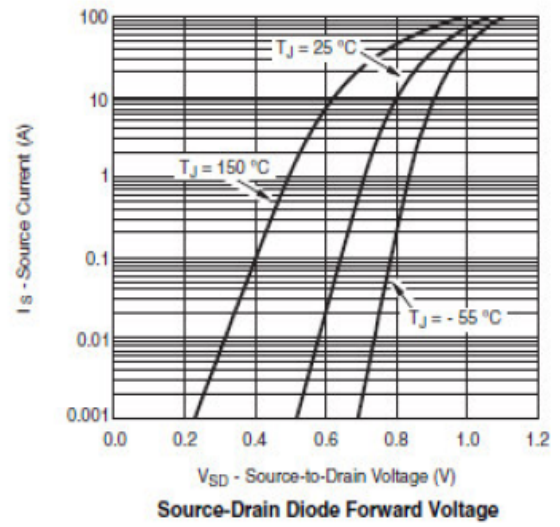
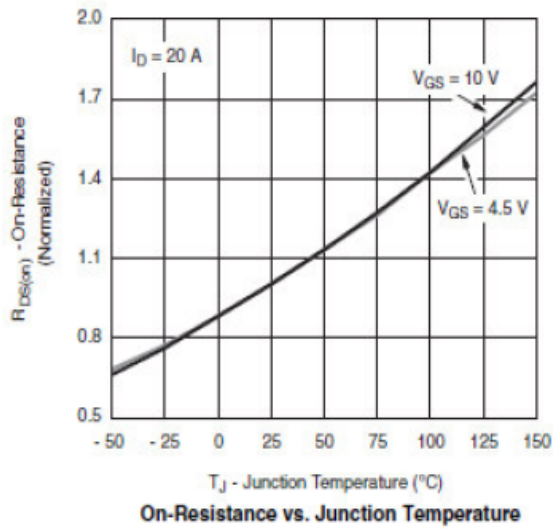
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0		2.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V			1	μA
		V _{DS} =32V, V _{GS} =0V, T _J =85°C			10	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =10V	50			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A		3.5	5.5	mΩ
		V _{GS} =4.5V, I _D =15A		4.5	6.5	
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =15A		75		S
V _{SD}	Diode Forward Voltage	I _S =10A, V _{GS} =0V		0.85	1.3	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz		2500		pF
C _{oss}	Output Capacitance			280		
C _{rss}	Reverse Transfer Capacitance			120		
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _D =20A		18	30	nC
Q _{gs}	Gate-Source Charge			7		
Q _{gd}	Gate-Drain Charge			5		
t _{d(on)}	Turn-On Time	V _{DD} =20V, R _L =1Ω, I _D =20A V _{GEN} =10V, R _G =1Ω		10	20	ns
T _r				6	15	
t _{d(off)}	Turn-Off Time			40	65	
T _f				6	15	

Typical Performance Characteristics

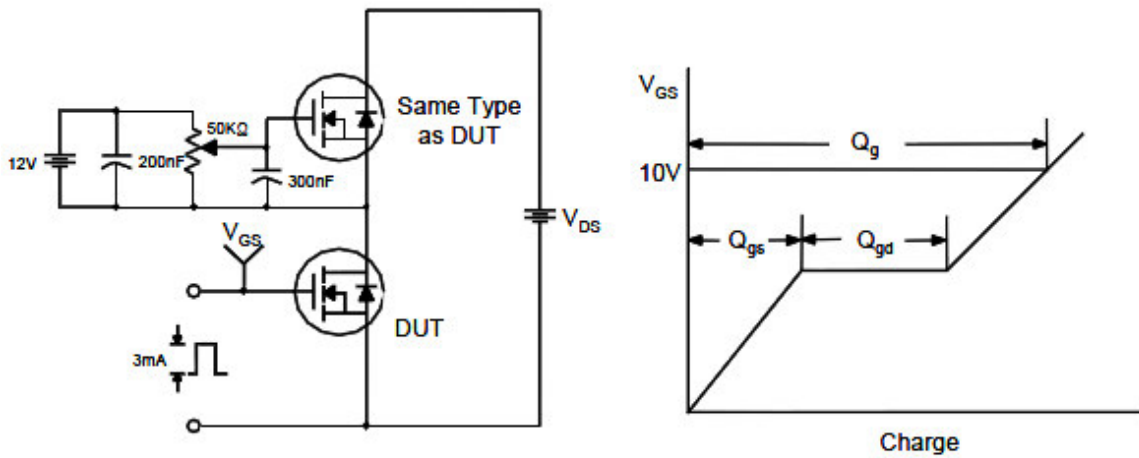


Typical Performance Characteristics (continue)

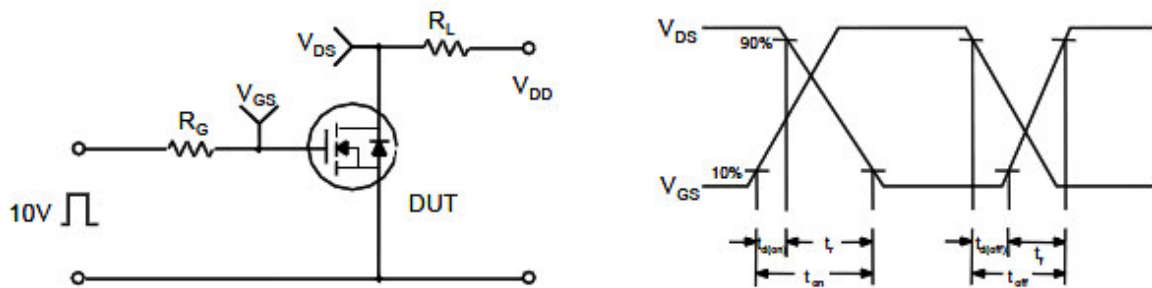


Typical Characteristics

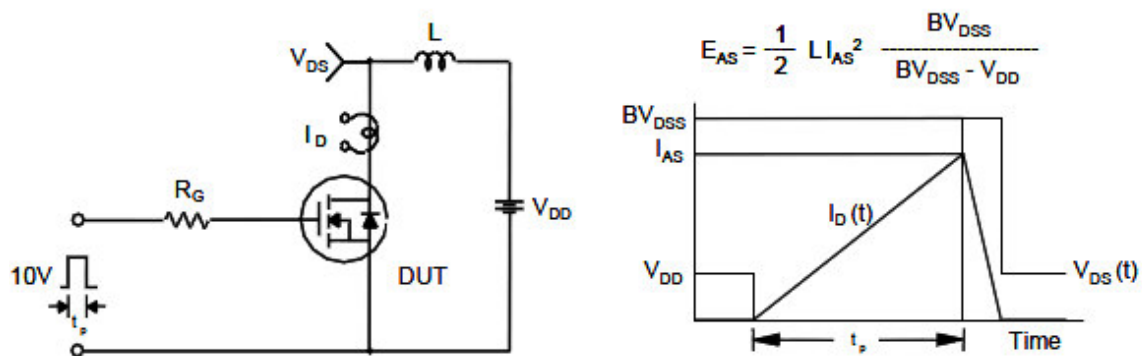
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

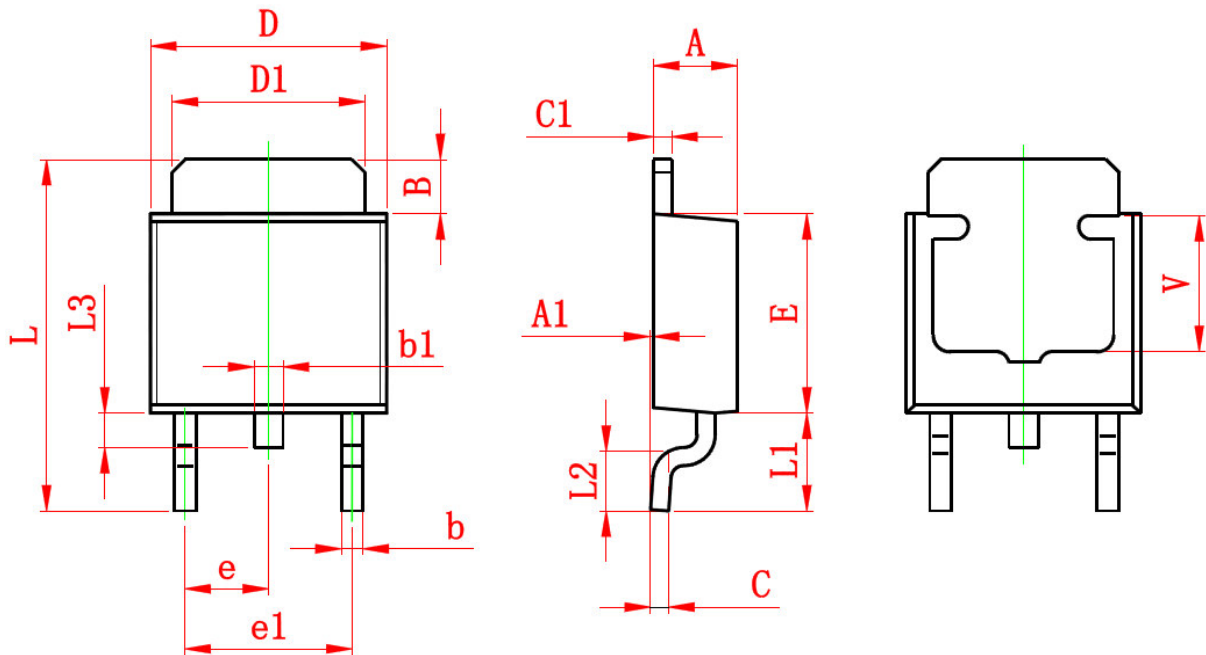


Unclamped Inductive Switching Test Circuit & Waveforms



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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