

# GSM4637

## 40V P-Channel Enhancement Mode MOSFET

### Product Description

GSM4637, 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.

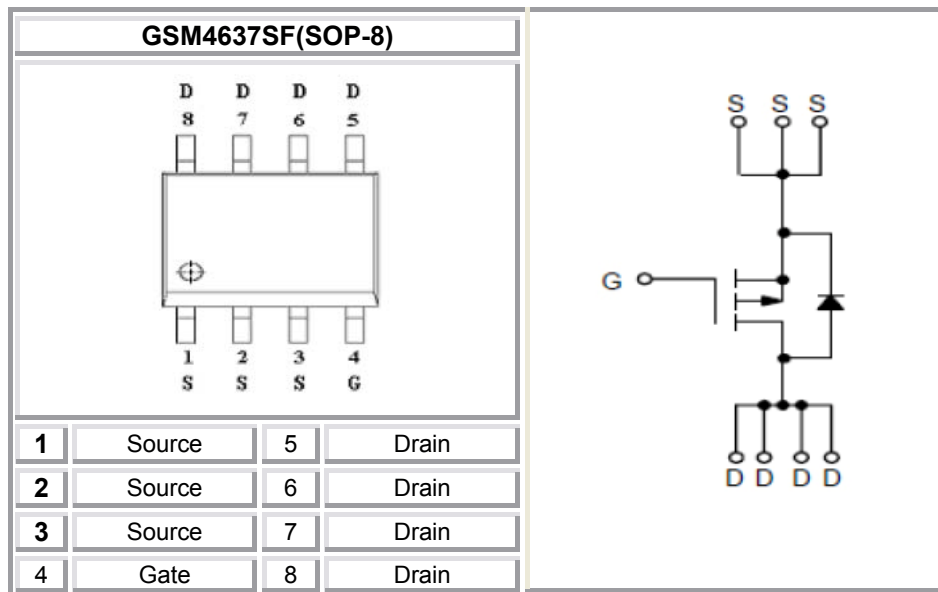
### Features

- -40V/-6.8A,  $R_{DS(ON)} = 37m\Omega @ V_{GS} = -10V$
- -40V/-5.8A,  $R_{DS(ON)} = 54m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8P package design

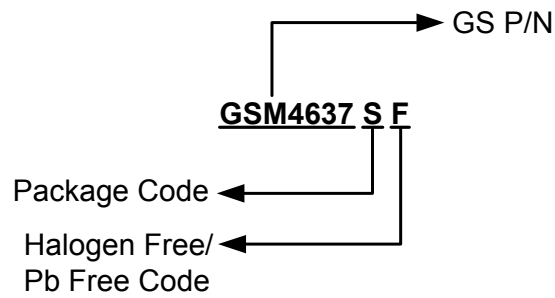
### Applications

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

### Packages & Pin Assignments

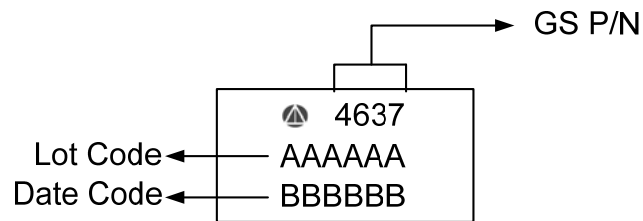


## Ordering Information



Part Number	Package	Quantity Reel
GSM4637SF	SOP-8	3000 PCS

## Marking Information



## Absolute Maximum Ratings

(T<sub>A</sub>=25°C unless otherwise noted)

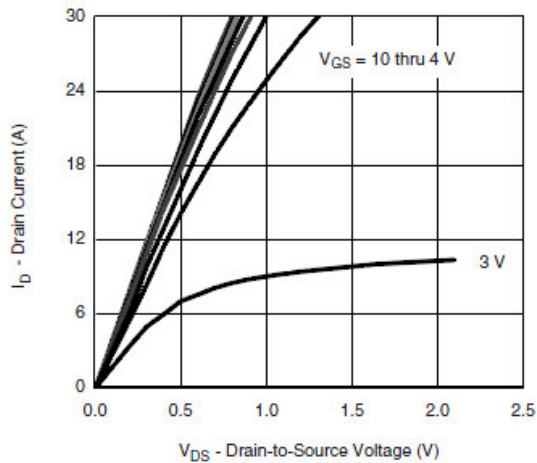
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	-40	V	
V <sub>GSS</sub>	Gate -Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	-6.8	A
		T <sub>A</sub> =70°C	-5.8	
I <sub>DM</sub>	Pulsed Drain Current	-20	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	-2	A	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	2.8	W
		T <sub>A</sub> =70°C	1.8	
T <sub>J</sub>	Operating Junction Temperature	150	°C	
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	62.5	°C/ W	

## Electrical Characteristics

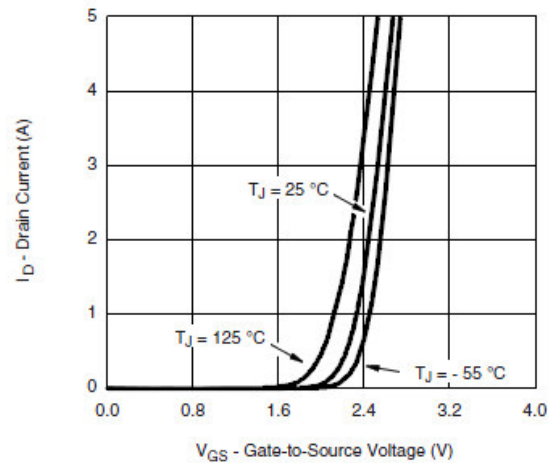
( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-3.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-40V, V_{GS}=0V$			-1	uA
		$V_{DS}=-40V, V_{GS}=0V, T_J=85^{\circ}\text{C}$			-20	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-10V$	-20			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-6.8A$		30	37	m $\Omega$
		$V_{GS}=-4.5V, I_D=-5.8A$		38	54	
$g_{fs}$	Forward Transconductance	$V_{DS}=-15V, I_D=-5A$		20		S
$V_{SD}$	Diode Forward Voltage	$I_S=-2A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-20V, V_{GS}=0V, f=1\text{MHz}$		1100		pF
$C_{oss}$	Output Capacitance			145		
$C_{riss}$	Reverse Transfer Capacitance			115		
$Q_g$	Total Gate Charge	$V_{DS}=-20V, V_{GS}=-4.5V, I_D=-5.0A$		13	20	nC
$Q_{gs}$	Gate-Source Charge			4.5		
$Q_{gd}$	Gate-Drain Charge			6.5		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-20V, R_L=4\Omega, I_D=-5.0A, V_{GEN}=-4.5V, R_G=1\Omega$		40	80	ns
$T_r$				55	100	
$t_{d(off)}$				30	60	
$T_f$				12	20	

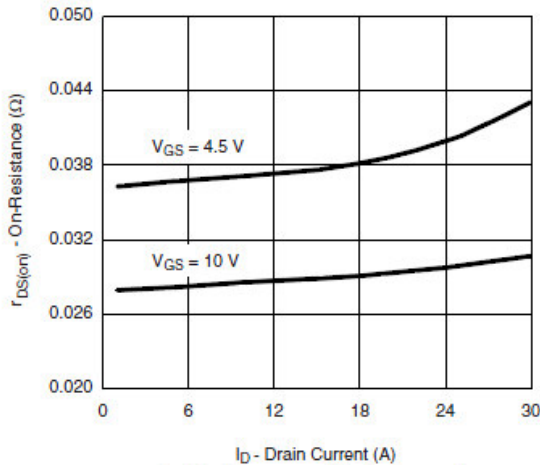
## Typical Performance Characteristics



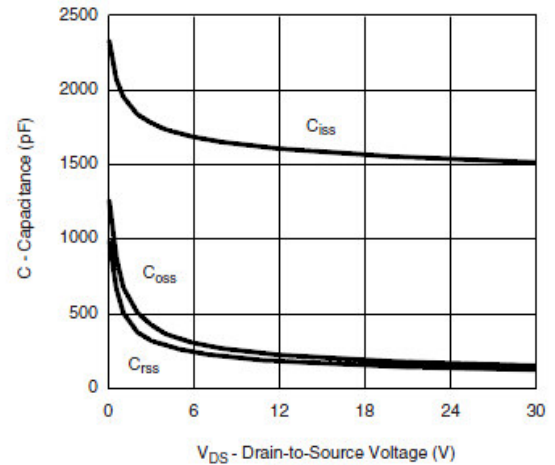
Output Characteristics



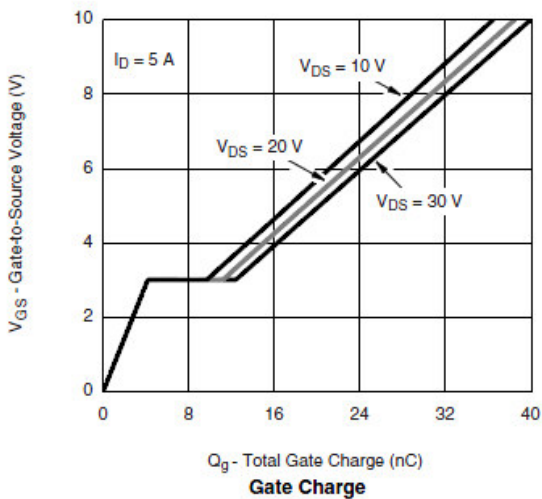
Transfer Characteristics



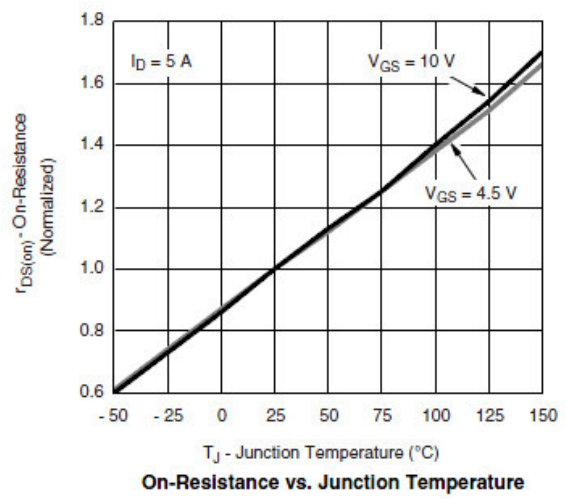
On-Resistance vs. Drain Current



Capacitance

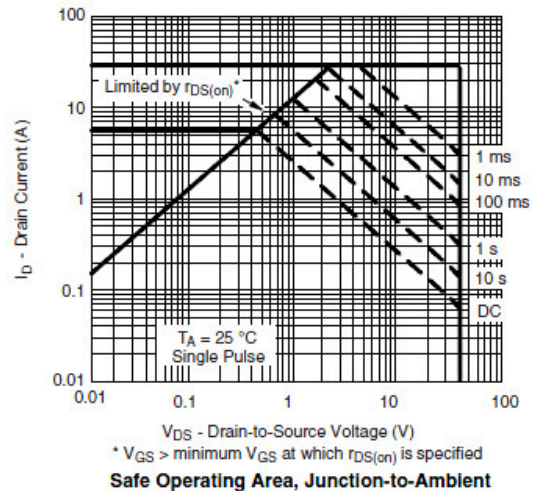
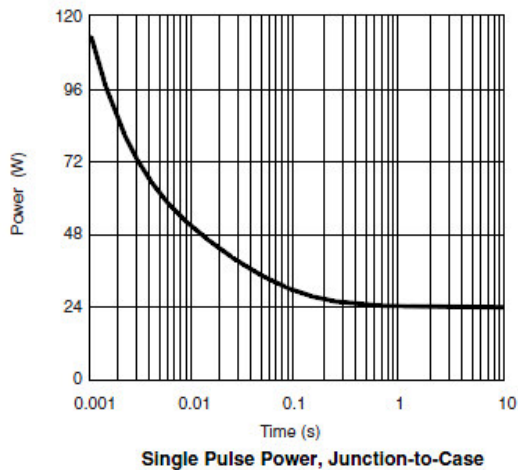
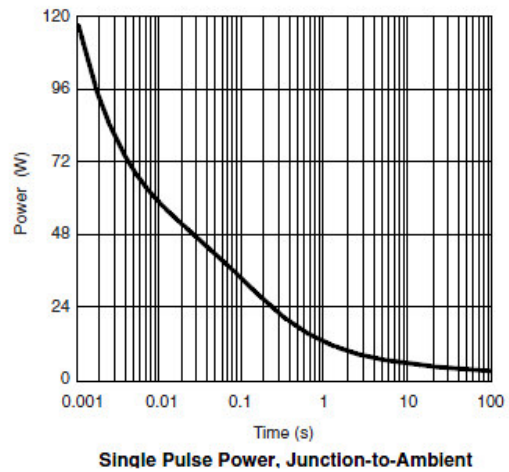
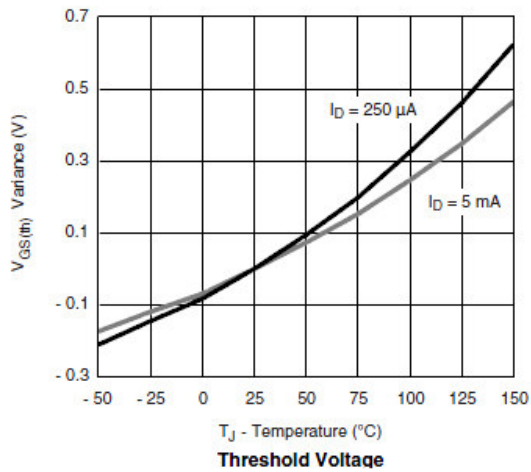
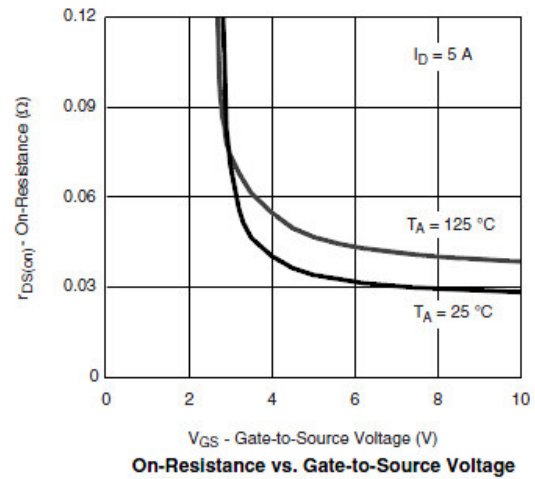
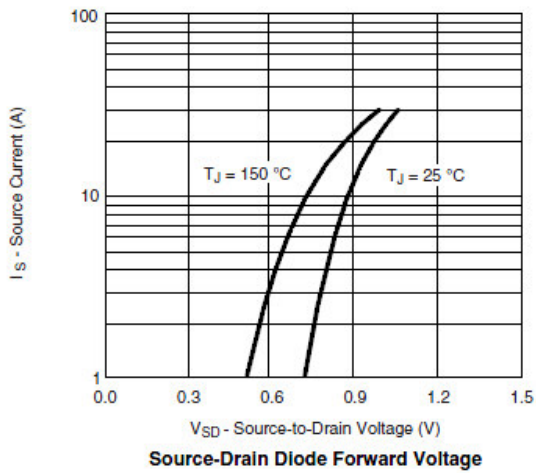


Gate Charge

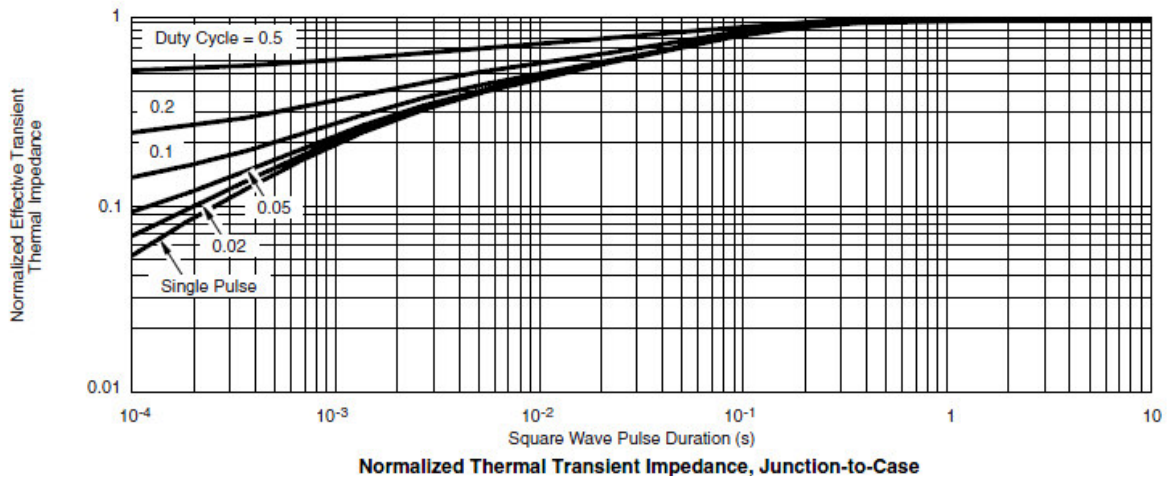
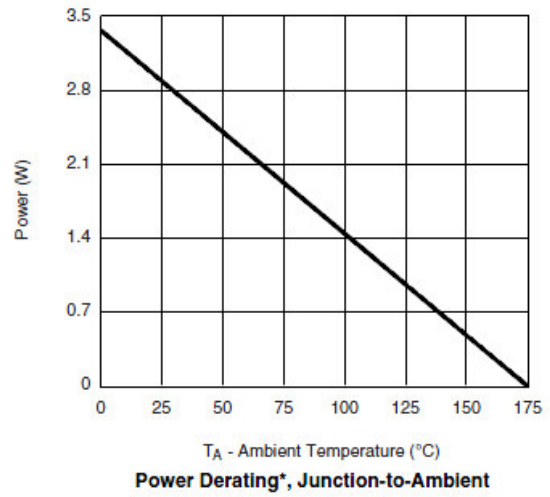
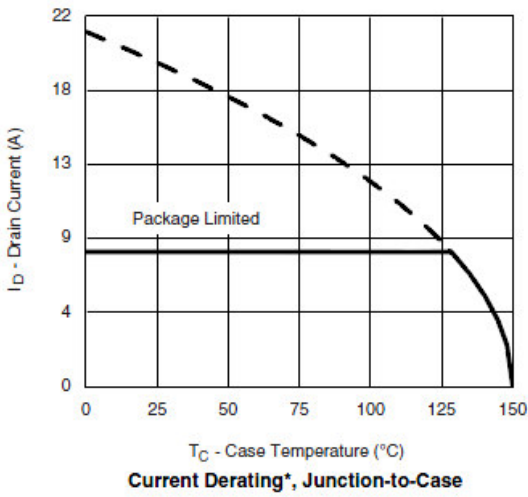
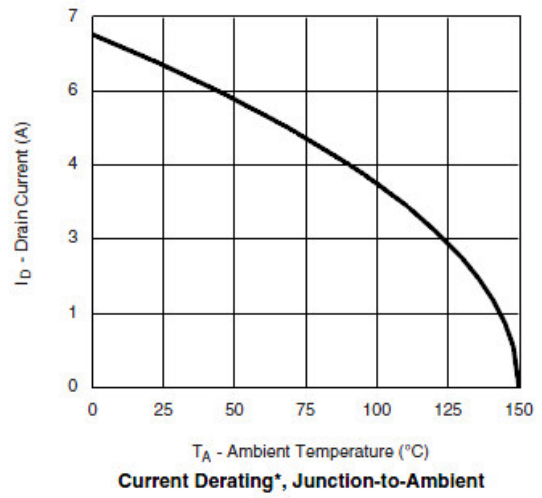
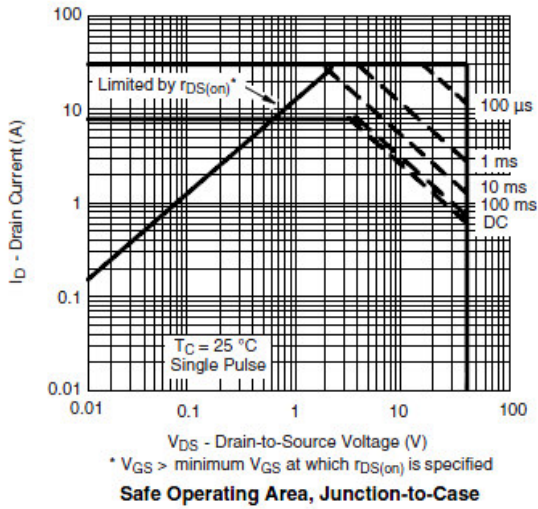


On-Resistance vs. Junction Temperature

## Typical Performance Characteristics (continue)

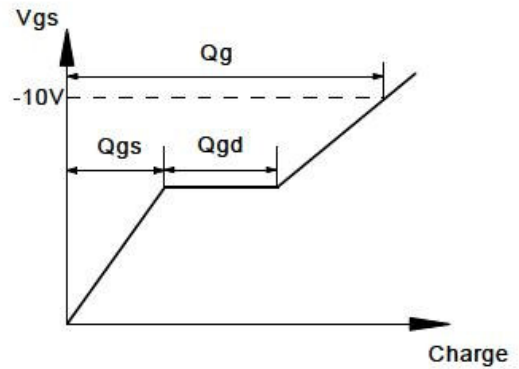
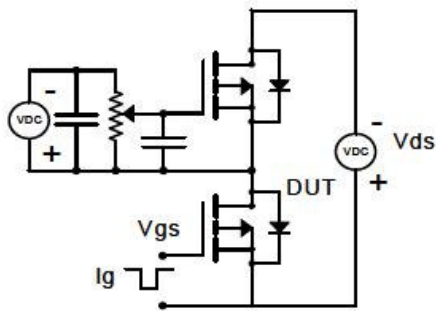


## Typical Performance Characteristics (continue)

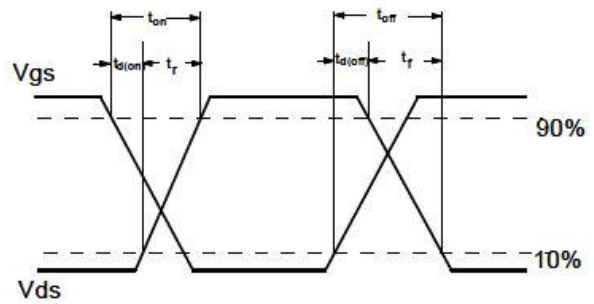
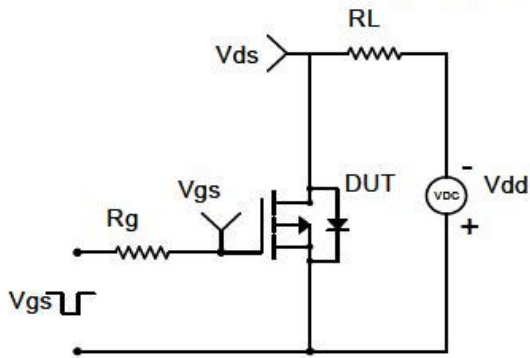


## Typical Characteristics

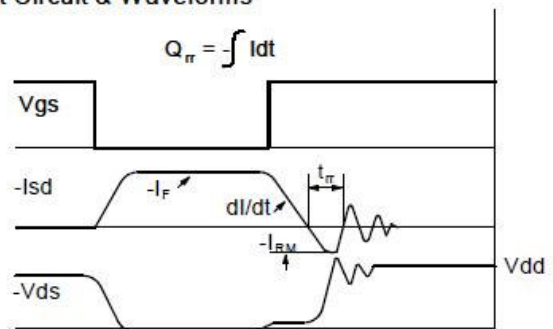
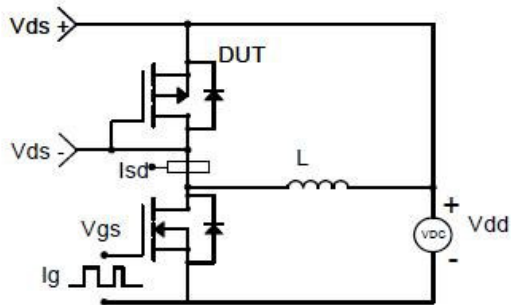
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

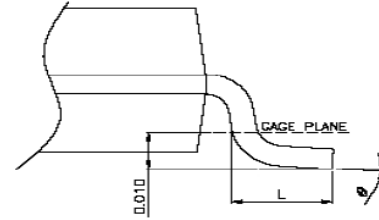
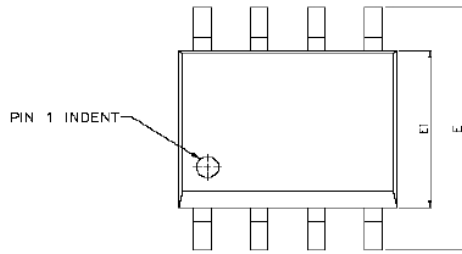


Diode Recovery Test Circuit & Waveforms

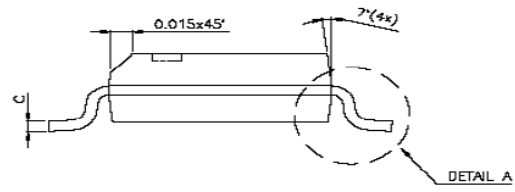
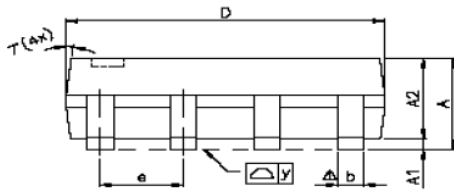


Package Dimension

# SOP-8P PLASTIC PACKAGE



DETAIL A



## Dimensions





SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	-	0.25	0.004	-	0.010
A2	-	1.45	-	-	0.057	-
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	-	1.27	-	-	0.050	-
L	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta y$	-	-	0.076	-	-	0.003
$\theta$	0°	-	8°	0°	-	8°







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