

GSM1912

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM1912, 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, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

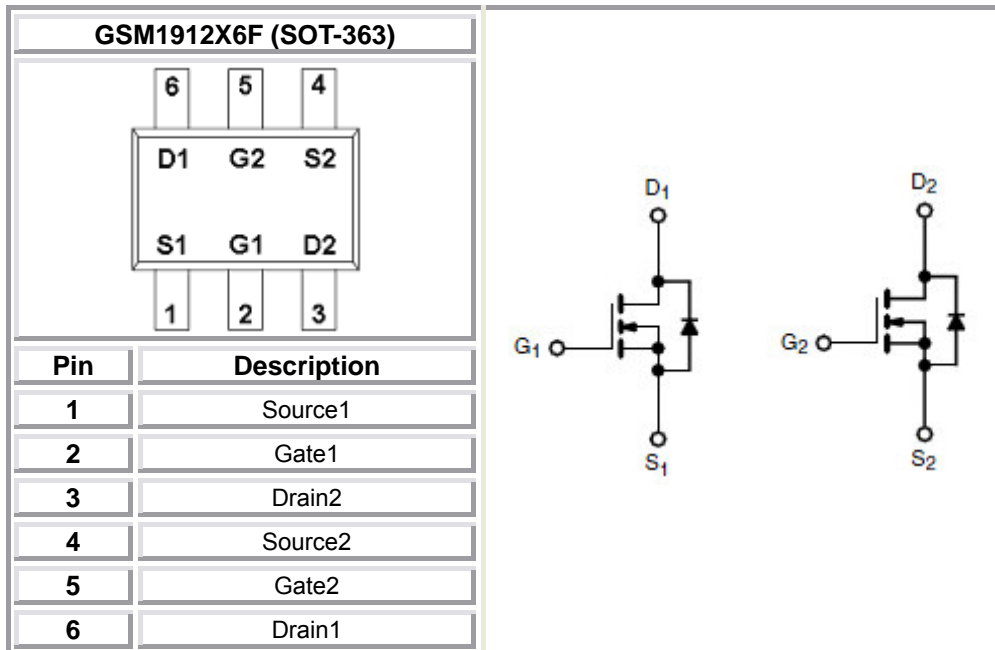
Features

- 20V/1.8A, $R_{DS(ON)}=280m\Omega@V_{GS}=4.5V$
- 20V/1.5A, $R_{DS(ON)}=340m\Omega@V_{GS}=2.5V$
- 20V/1.2A, $R_{DS(ON)}=580m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-363 package design

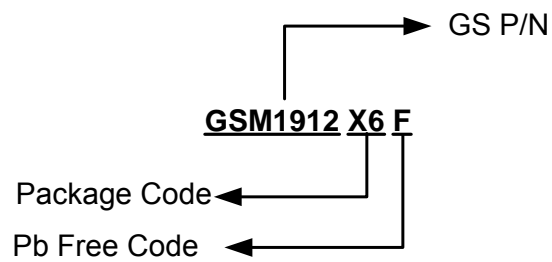
Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Packages & Pin Assignments

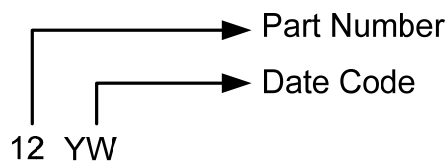


Ordering Information



Part Number	Package	Quantity Reel
GSM1912X6F	SOT-363	3000 PCS

Marking Information



Absolute Maximum Ratings

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

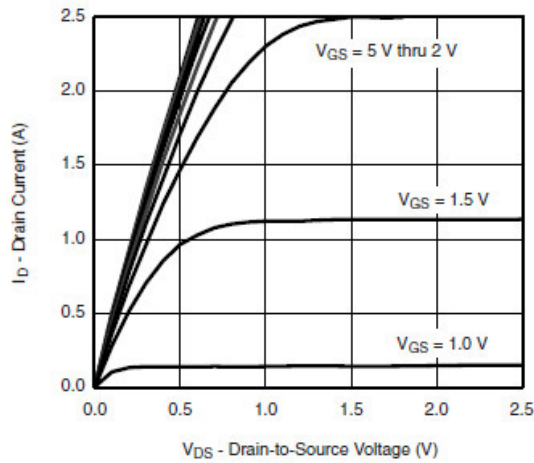
Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate –Source Voltage	± 12	V
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_A=25^\circ\text{C}$	1.8
		$T_A=70^\circ\text{C}$	1.2
I_{DM}	Pulsed Drain Current	6	A
I_S	Continuous Source Current(Diode Conduction)	1	A
P_D	Power Dissipation	$T_A=25^\circ\text{C}$	0.3
		$T_A=70^\circ\text{C}$	0.2
T_J	Operating Junction Temperature	-55/150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55/150	$^\circ\text{C}$

Electrical Characteristics

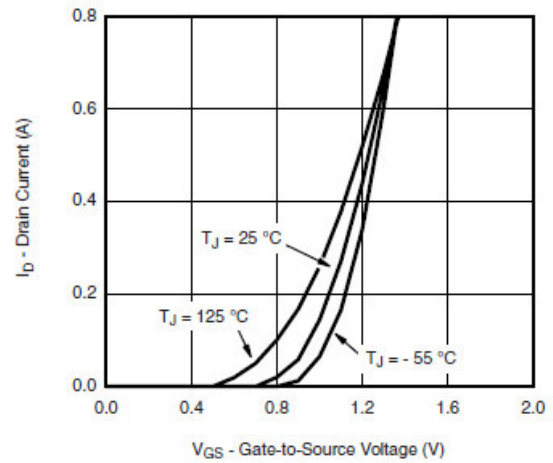
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.4		1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
		V _{DS} =20V, V _{GS} =0V, T _J =85°C			5	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	1.8			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =1.8A		240	280	mΩ
		V _{GS} =2.5V, I _D =1.5A		300	340	
		V _{GS} =1.8V, I _D =1.2A		500	580	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =1.0A		1		S
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V		0.65	1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz		70		pF
C _{oss}	Output Capacitance			20		
C _{rss}	Reverse Transfer Capacitance			8		
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =1.2A		1.06	1.38	nC
Q _{gs}	Gate-Source Charge			0.18		
Q _{gd}	Gate-Drain Charge			0.32		
t _{d(on)}	Turn-On Time	V _{DD} =10V, R _L =20Ω, I _D =1.2A, V _{GEN} =4.5V, R _G =1Ω		18	26	ns
t _r				20	28	
t _{d(off)}	Turn-Off Time			70	110	
t _f				25	40	

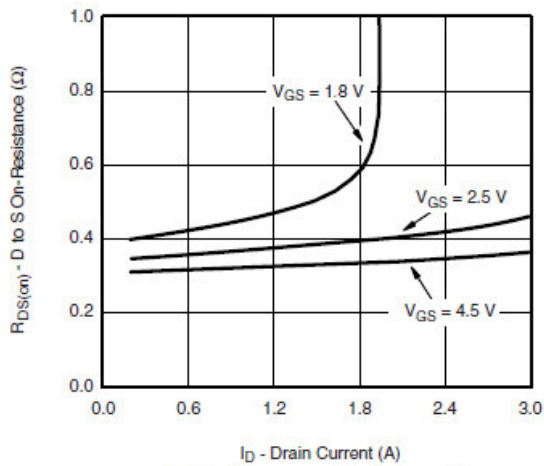
Typical Performance Characteristics



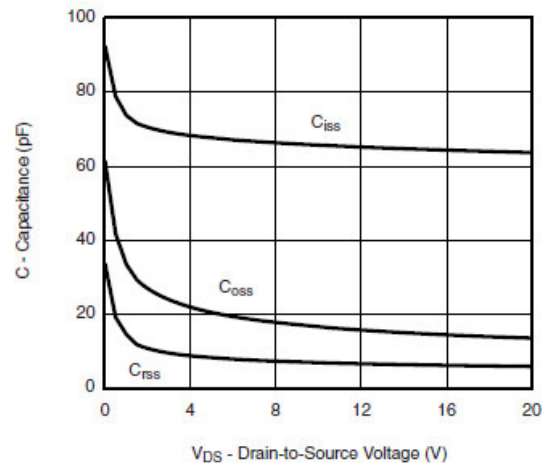
Output Characteristics



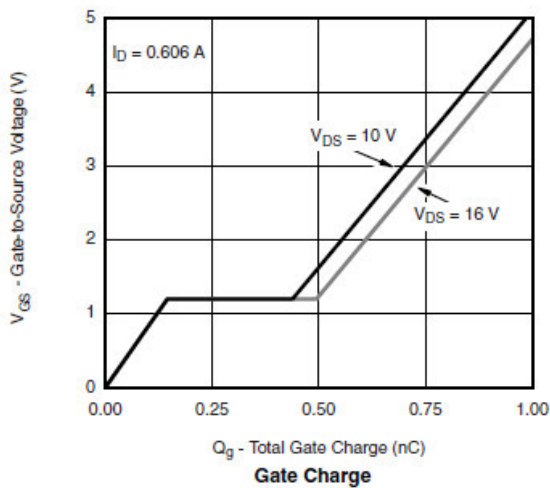
Transfer Characteristics



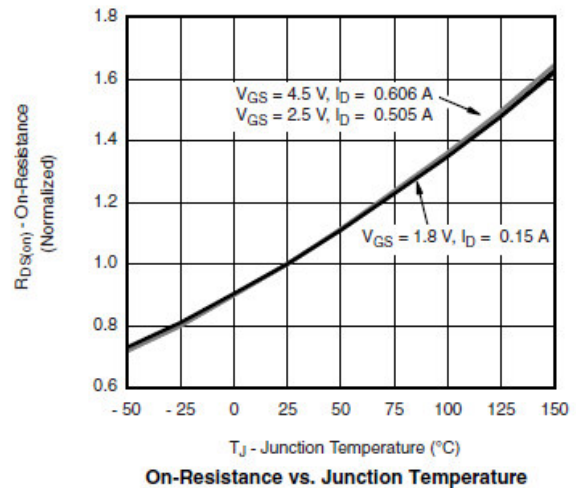
On-Resistance vs. Drain Current



Capacitance

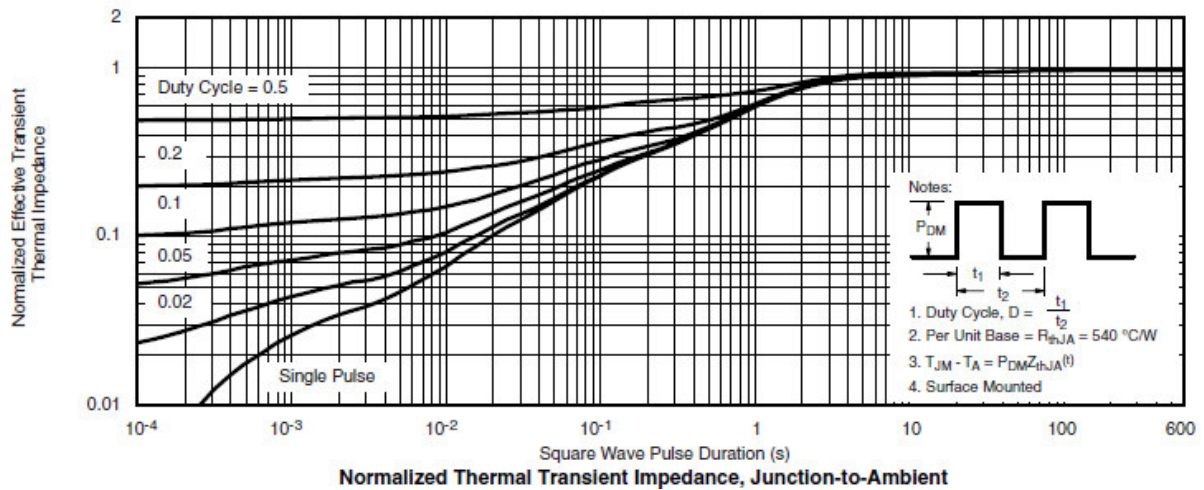
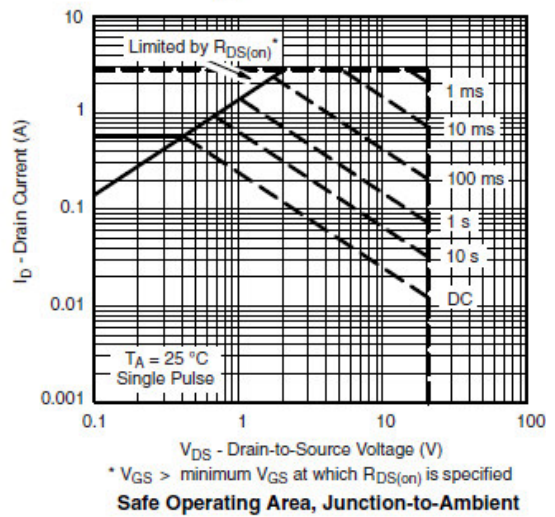
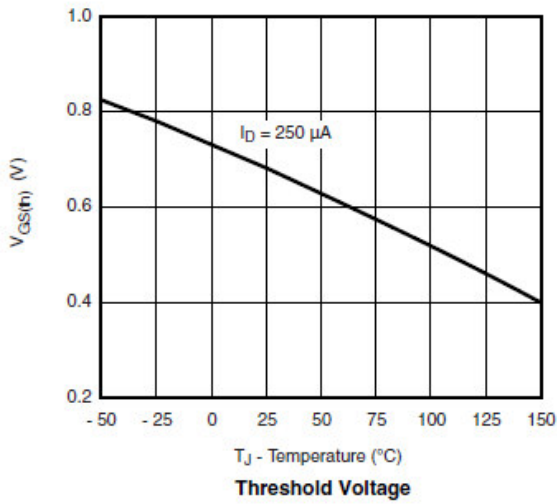
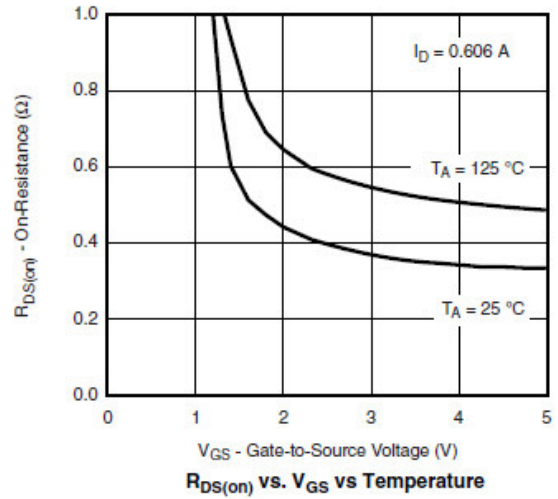
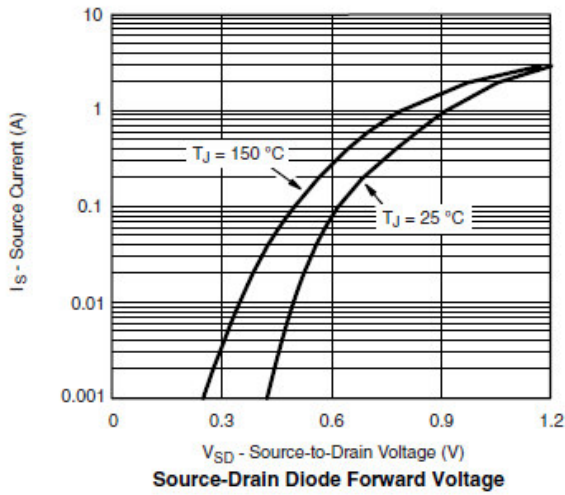


Gate Charge



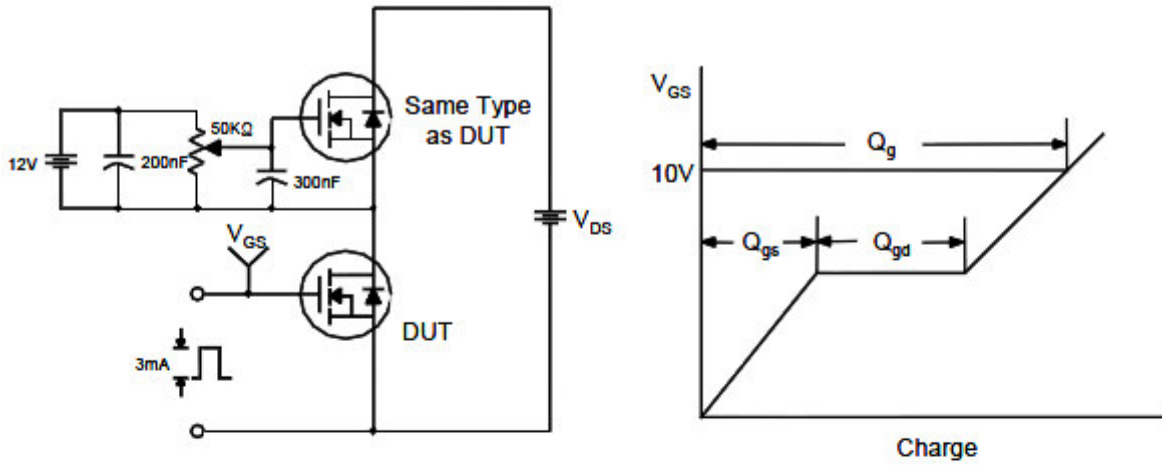
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (continue)

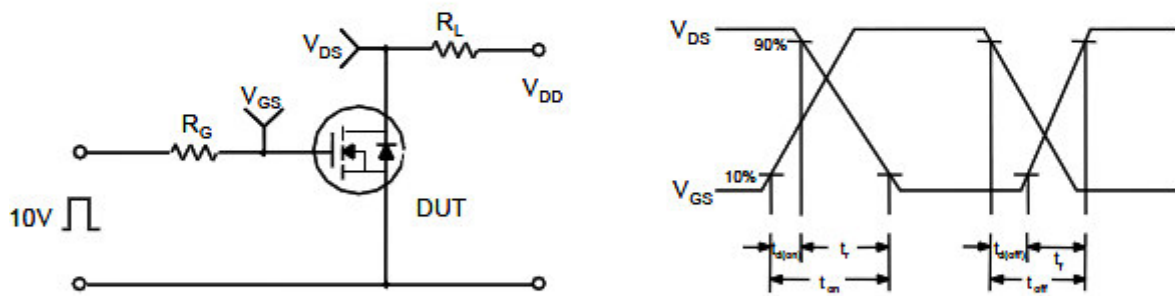


Typical Performance Characteristics (continue)

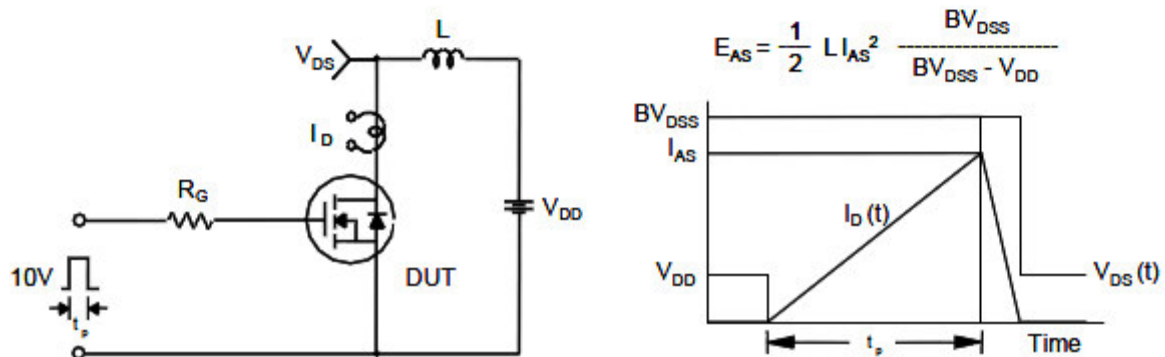
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

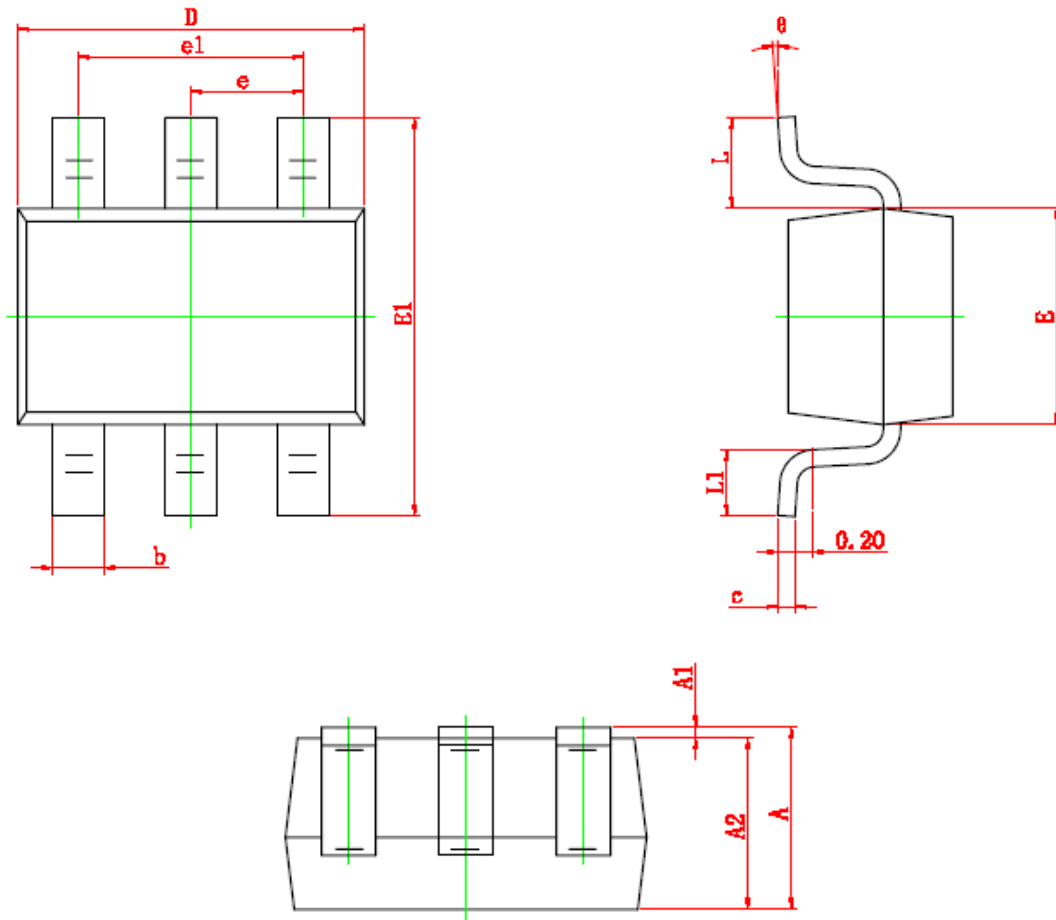


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-363 PLASTIC PACKAGE







Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
A2	0.90	1.00	0.035	0.039
b	0.15	0.35	0.006	0.014
c	0.08	0.15	0.003	0.006
D	2.00	2.2	0.079	0.087
E	1.15	1.35	0.045	0.053
E1	2.15	2.45	0.085	0.096
e	0.650 (TYP)		0.026 (TYP)	
e1	1.20	1.4	0.047	0.055
L	0.525 (REF)		0.021 (REF)	
L1	0.26	0.46	0.010	0.018
Q	0°	8°	0°	8°



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