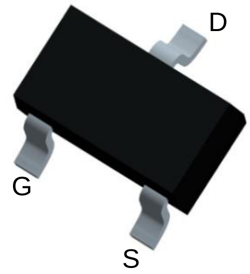
KS2302AA

Single N-Channel Advanced Power MOSFET

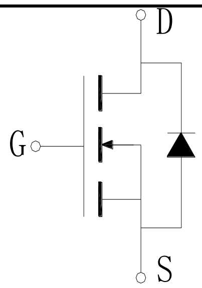
Features

- 20V/3A,
  $R_{DS\ (ON)}$ =43mΩ(Typ.)@V_{GS}=4.5V
  $R_{DS\ (ON)}$ =55mΩ(Typ.)@V_{GS}=2.5V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Pin Description



SOT23



Single N-Channel MOSFET

Applications

- Load Switch

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	1.3	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_A=25°C	12	A
I_D ②	Continuous Drain Current(V_{GS}=4.5V)	T_A=25°C	3	A
		T_A=70°C	2.4	
P_D	Maximum Power Dissipation	T_A=25°C	1	W
		T_A=70°C	0.64	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		125	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		TBD	mJ

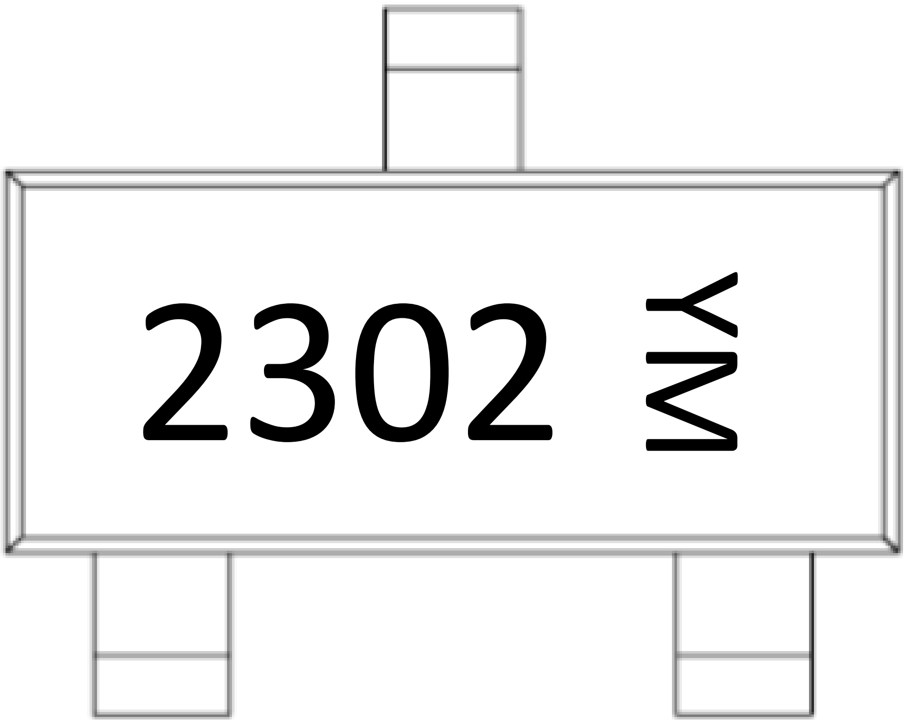
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS2302AA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.4	0.65	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=2A		43	56	mΩ
		V_{GS}=2.5V, I_{DS}=1.5A		55	78	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=2A, V_{GS}=0V		0.75	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=2A, dI_{SD}/dt=100A/μs		15		ns
Q_{rr}	Reverse Recovery Charge			6		nC
Dynamic Characteristics⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.2		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz		480		pF
C_{oss}	Output Capacitance			80		
C_{rss}	Reverse Transfer Capacitance			55		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, I_{DS}=2A, V_{GEN}=4.5V,R_G=6Ω		12		ns
t_r	Turn-on Rise Time			55		
$t_{d(OFF)}$	Turn-off Delay Time			19		
t_f	Turn-off Fall Time			11		
Gate Charge Characteristics⑥						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=2A		4		nC
Q_{gs}	Gate-Source Charge			0.7		
Q_{gd}	Gate-Drain Charge			1.2		

Notes:
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t⩽10sec. The value in any given application depends on the user's specific board design.
④Limited by $T_{Jmax.}$ Starting T_J = 25°C.
⑤Pulse test;Pulse width⩽300μs, duty cycle⩽2%.
⑥Guaranteed by design, not subject to production testing.

Ordering and Marking Information

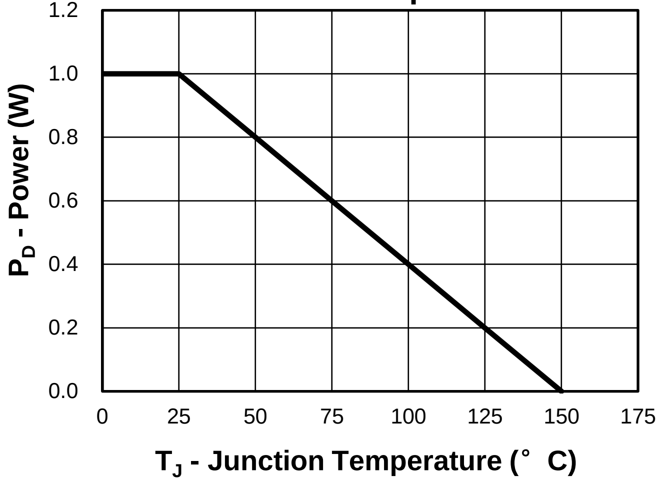
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS2302AA	SOT23	Tape&Reel	3000	7’’	8mm



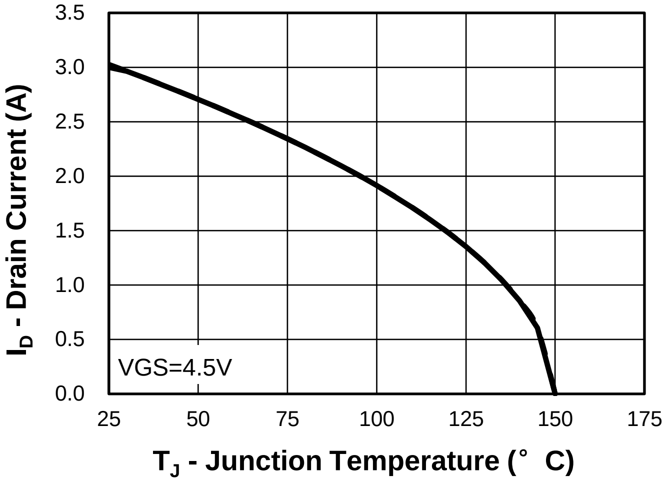
Y =Year,2017-A,2018-B,etc.
M =Month,Jan-1,Feb-2,....Sep-9,Oct-A,Nov-B,Dec-C.

Typical Characteristics

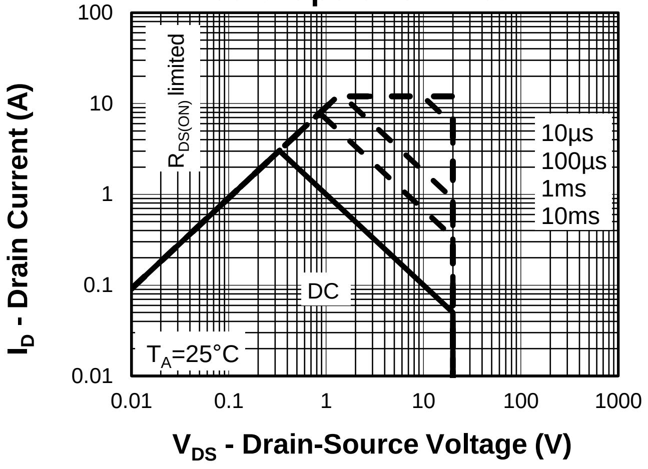
Power Dissipation



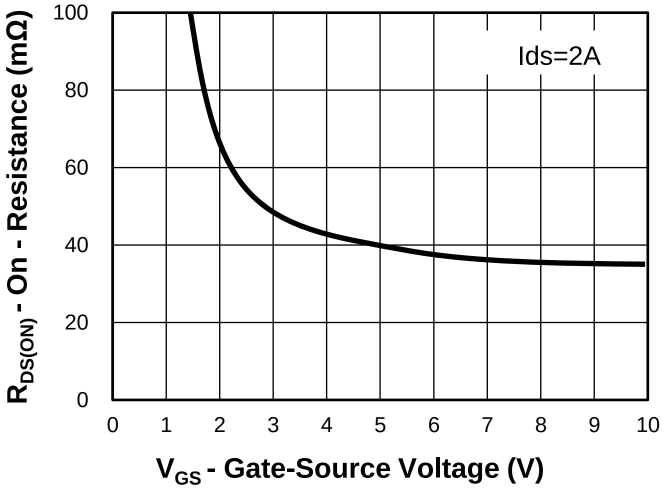
Drain Current



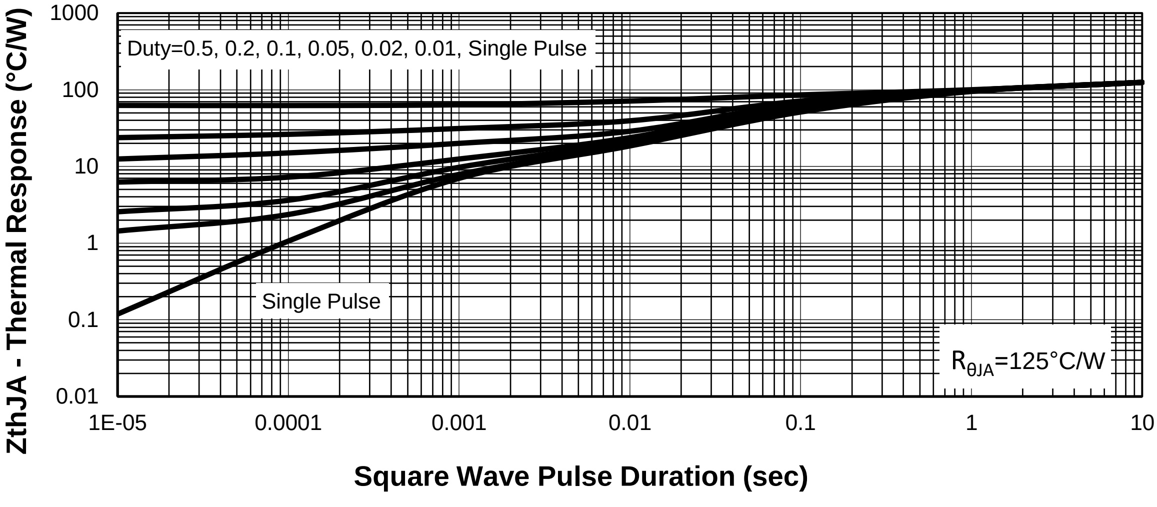
Safe Operation Area



Drain Current

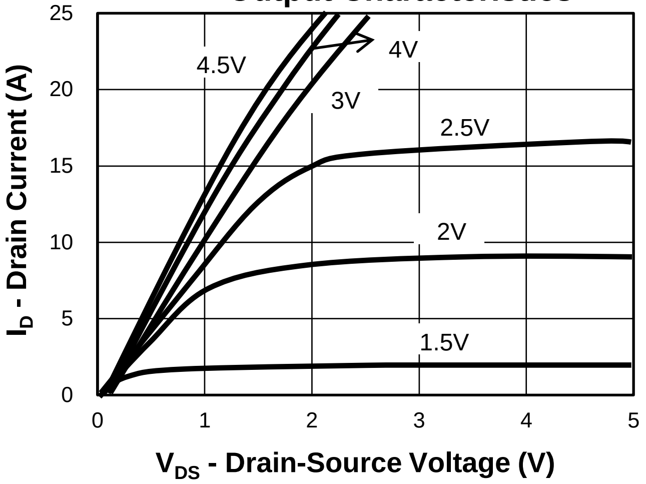


Thermal Transient Impedance

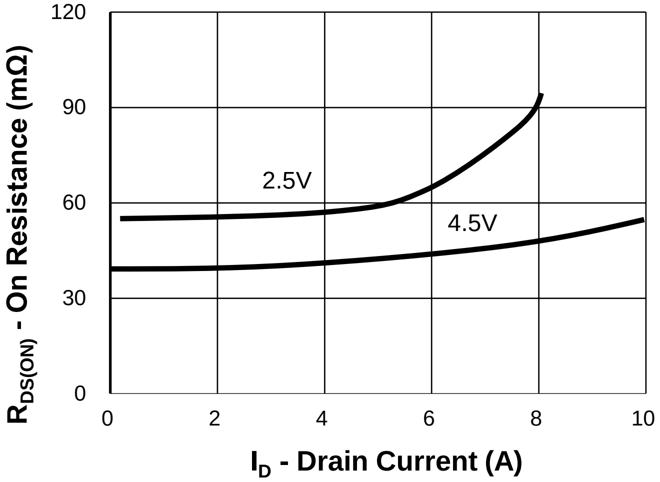


Typical Characteristics

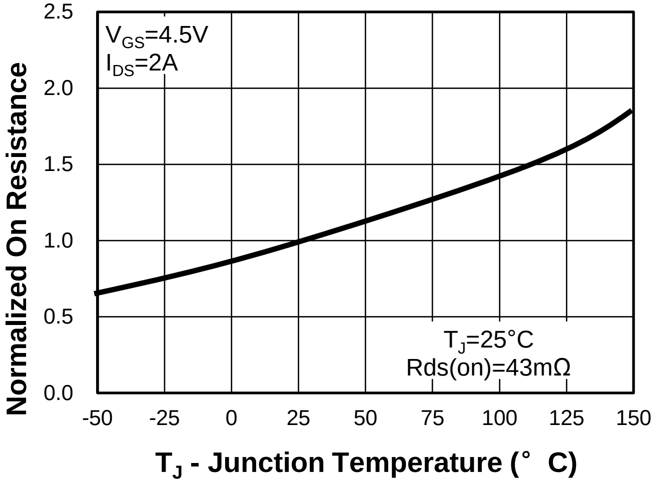
Output Characteristics



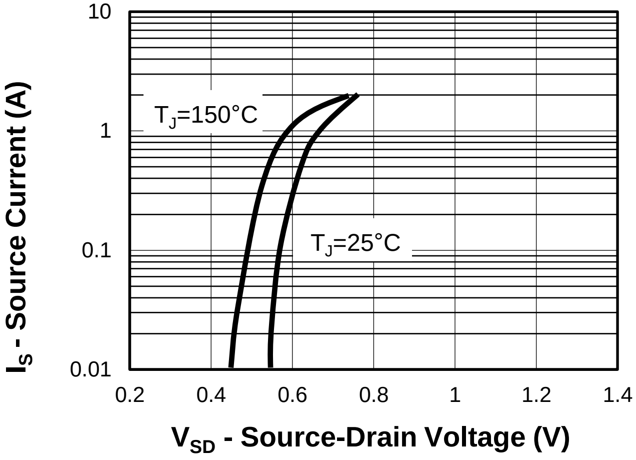
Drain-Source On Resistance



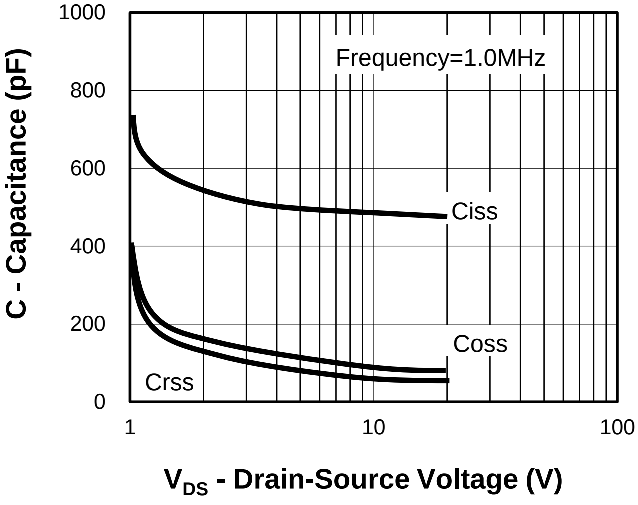
Drain-Source On Resistance



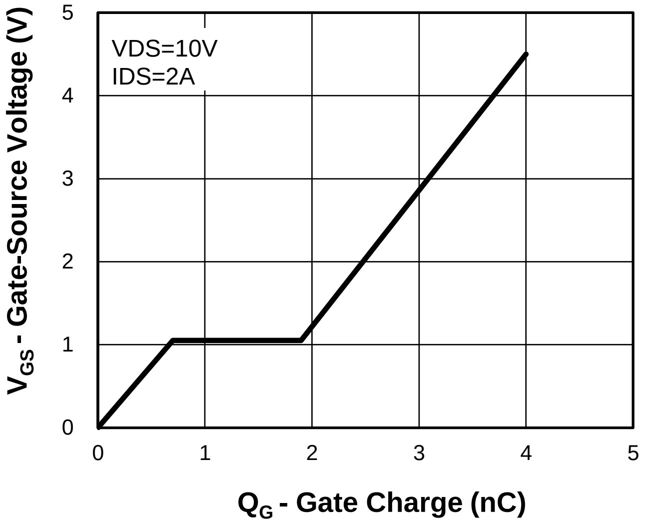
Source-Drain Diode Forward



Capacitance

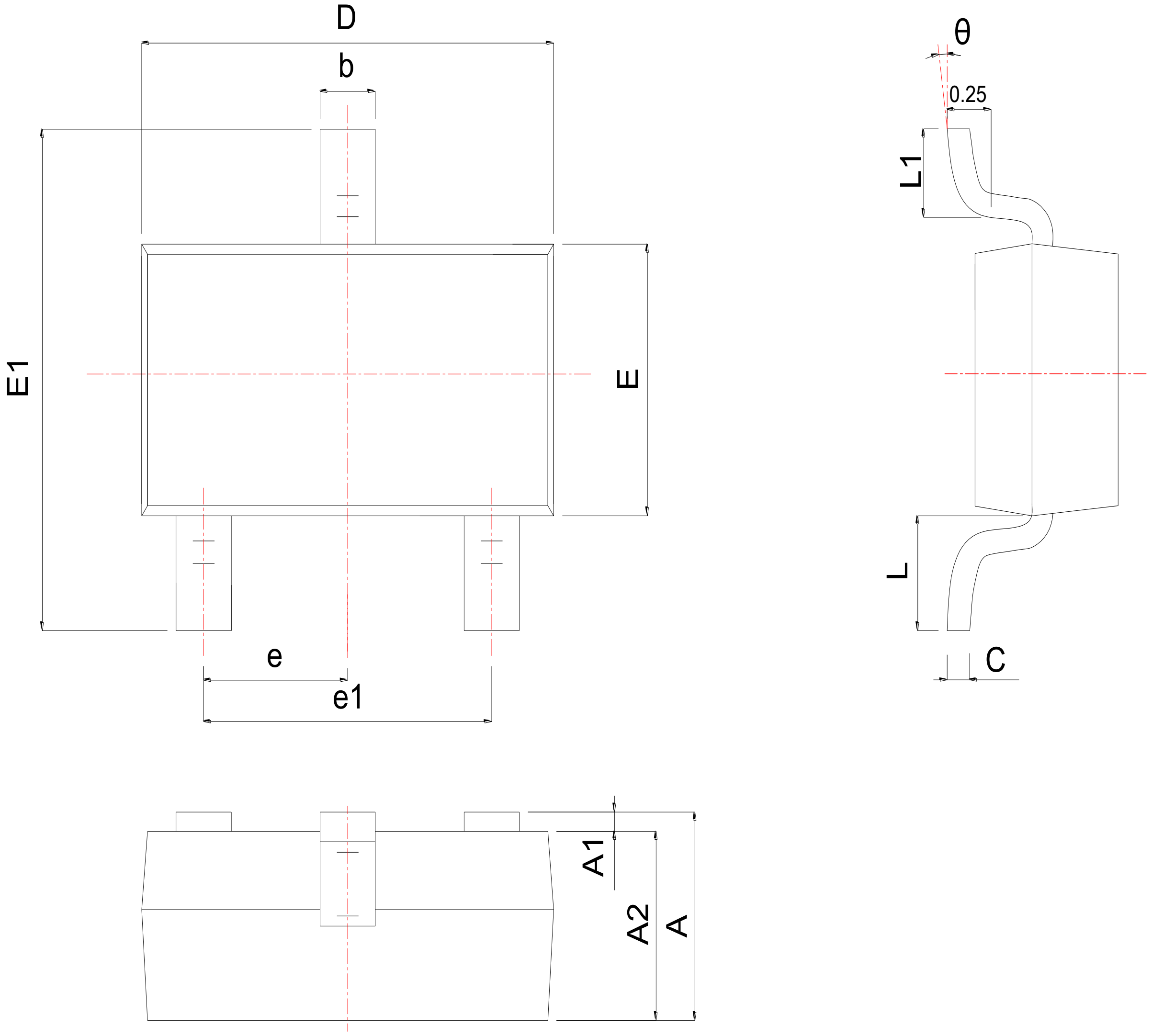


Gate Charge



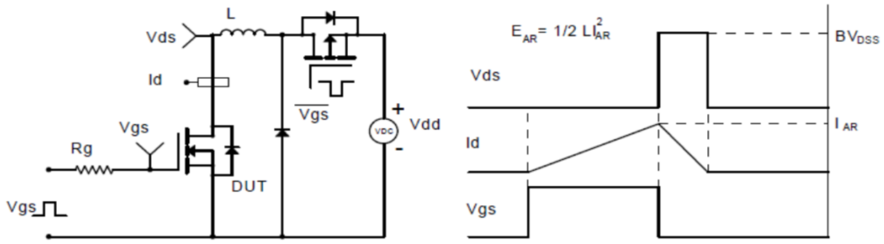
Package Information

SOT23

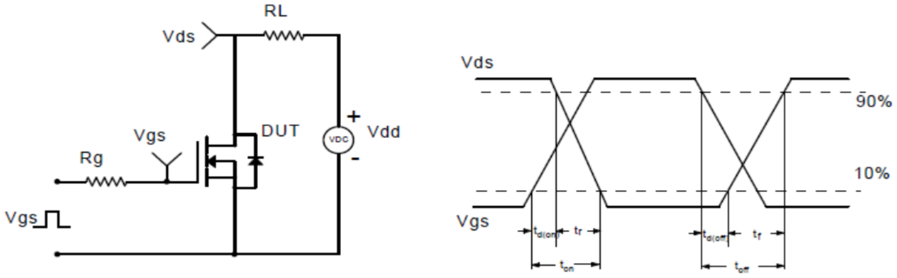


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.900	1.025	1.150	0.035	0.040	0.045
A1	0.050	0.075	0.100	0.002	0.003	0.004
A2	0.900	0.975	1.020	0.035	0.038	0.040
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.080	0.115	0.150	0.003	0.005	0.006
D	2.800	2.900	3.000	0.110	0.114	0.118
E	1.200	1.300	1.400	0.047	0.051	0.055
E1	2.250	2.400	2.550	0.089	0.094	0.100
e	0.950 TYP			0.037 TYP		
e1	1.800	1.900	2.000	0.071	0.075	0.079
L	0.540 REF			0.021 REF		
L1	0.400	0.500	0.600	0.016	0.018	0.020
θ	0°	*	8°	0°	*	8°

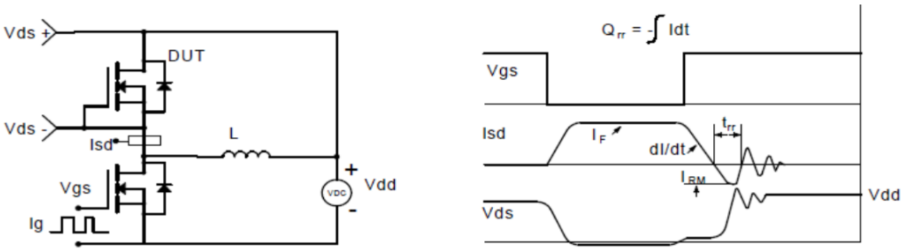
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform