

### Features

- -100V/-9A,  
 $R_{DS(ON)} = 230m\Omega(Typ.)@V_{GS}=-10V$   
 $R_{DS(ON)} = 255m\Omega(Typ.)@V_{GS}=-4.5V$
- Low  $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

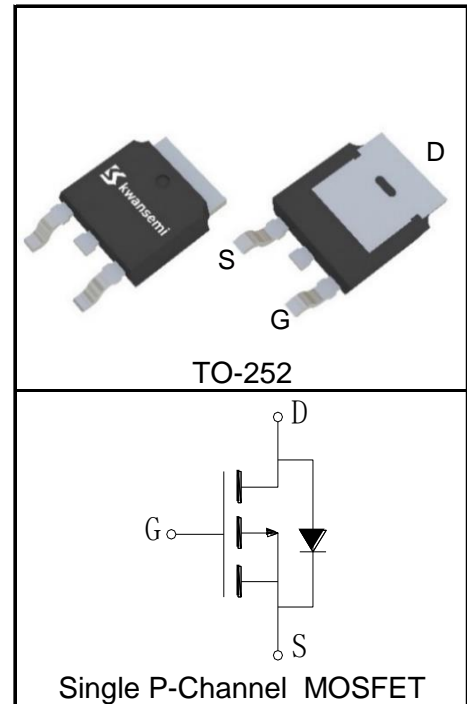
### Applications

- Power Switching Appliaction
- Load Switching



Halogen-Free

### Pin Description



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
<b>Common Ratings</b> ( $T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	-100	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$T_{Jmax}$	Maximum Junction Temperature	175	$^\circ\text{C}$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$I_S$	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ -9	A
<b>Mounted on Large Heat Sink</b>			
$I_{DP}^{①}$	Pulse Drain Current	$T_C=25^\circ\text{C}$ -36	A
$I_D^{②}$	Continuous Drain Current( $V_{GS}=-10V$ )	$T_C=25^\circ\text{C}$ -9	A
		$T_C=100^\circ\text{C}$ -6	
$P_D$	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 46	W
		$T_C=100^\circ\text{C}$ 23	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3.2	$^\circ\text{C/W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C/W}$
<b>Drain-Source Avalanche Ratings</b>			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	42	mJ

**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  Unless Otherwise Noted)

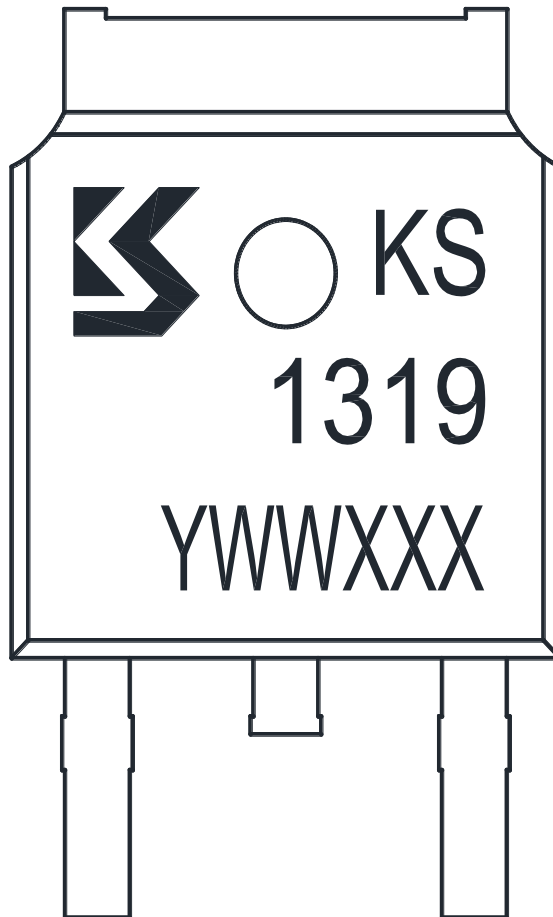
Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-100			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-100V, V_{GS}=0V$			-1	$\mu A$
		$T_J=125^\circ\text{C}$			-30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.2	-1.8	-2.3	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_{DS}=-4A$		230	280	$m\Omega$
		$V_{GS}=-4.5V, I_{DS}=-3A$		255	340	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=-4A, V_{GS}=0V$		-0.87	-1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=-4A, di_{SD}/dt=-100A/\mu s$		28		ns
$Q_{rr}$	Reverse Recovery Charge			76		nC
<b>Dynamic Characteristics</b> <sup>⑥</sup>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		65		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-50V,$ Frequency=1.0MHz		765		pF
$C_{oss}$	Output Capacitance			30		
$C_{rss}$	Reverse Transfer Capacitance			18		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-50V, I_{DS}=-4A,$ $V_{GEN}=-10V, R_G=3\Omega$		11		ns
$t_r$	Turn-on Rise Time			8		
$t_{d(OFF)}$	Turn-off Delay Time			29		
$t_f$	Turn-off Fall Time			11		
<b>Gate Charge Characteristics</b> <sup>⑥</sup>						
$Q_g$	Total Gate Charge	$V_{DS}=-50V, V_{GS}=-10V,$ $I_{DS}=-4A$		19		nC
$Q_{gs}$	Gate-Source Charge			3.4		
$Q_{gd}$	Gate-Drain Charge			4.2		

**Notes:**

- ① Pulse width limited by safe operating area.
- ② Calculated continuous current based on maximum allowable junction temperature.
- ③ When mounted on 1 inch square copper board,  $t \leq 10\text{sec}$ . The value in any given application depends on the user's specific board design.
- ④ Limited by  $T_{Jmax}$ , Starting  $T_J = 25^\circ\text{C}$ ,  $I_{ASmax} = -13A$ ,  $L=0.5\text{mH}$ ,  $V_{DD} = -48V$ ,  $R_G = 25\Omega$ ,  $V_{GS}=-10V$ . Part not recommended for use above this value. 100% Final Test at  $I_{AS}=-8A$ ,  $L=0.5\text{mH}$ .
- ⑤ Pulse test; Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- ⑥ Guaranteed by design, not subject to production testing.

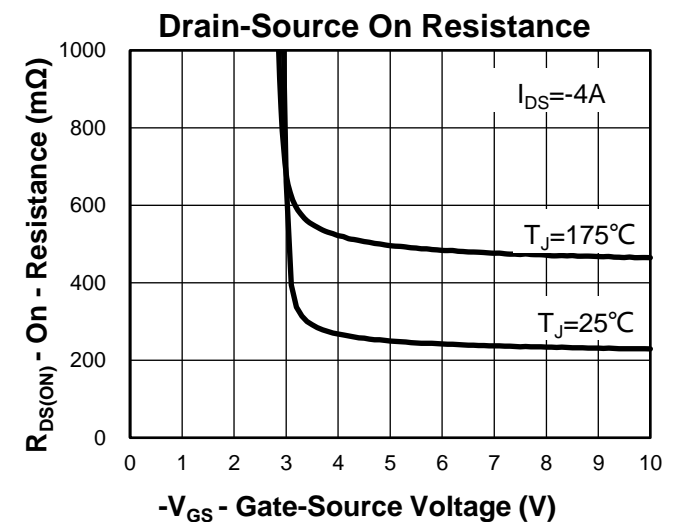
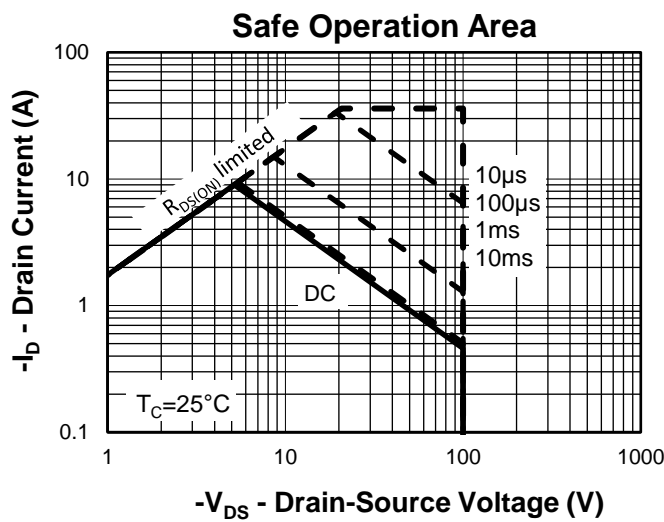
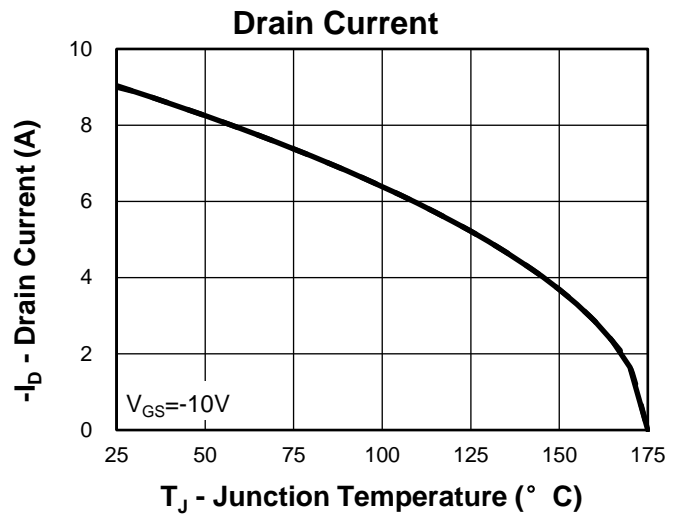
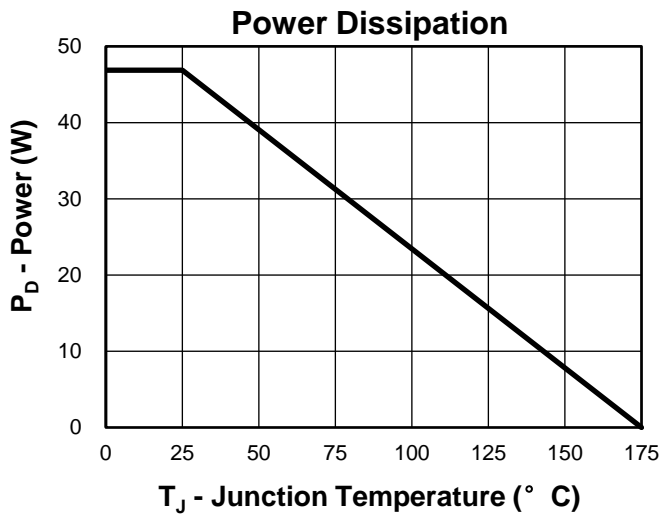
**Ordering and Marking Information**

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS1319DB	TO-252	Tape&Reel	2500	13"	16mm

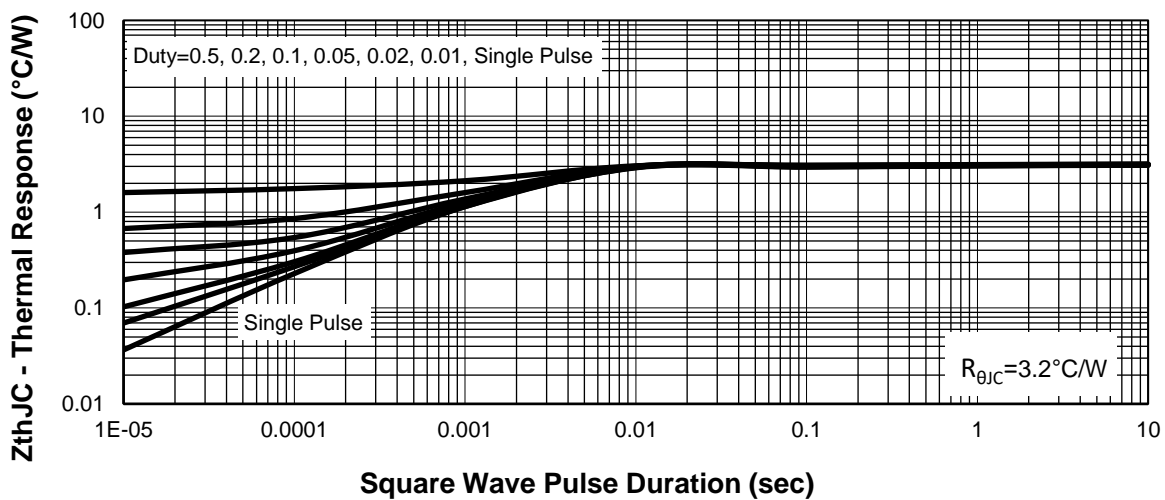


1st Line: Kwansemi LOGO, Kwansemi Code(KS)  
2nd Line: Part Number(1319)  
3rd Line: Lot Number(YWWXXX)

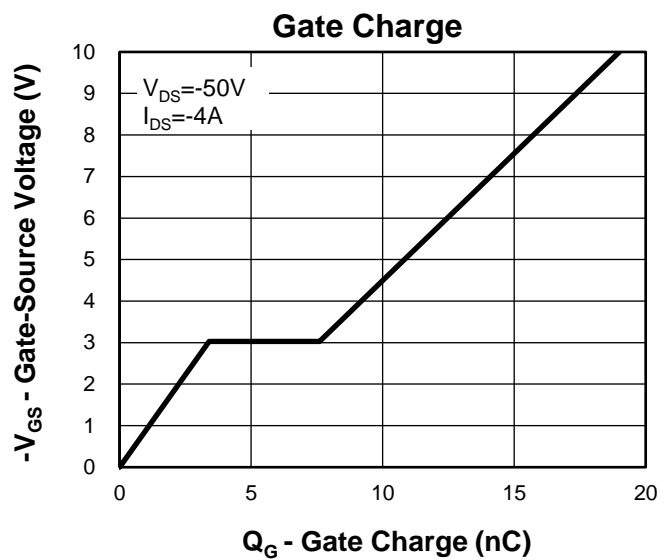
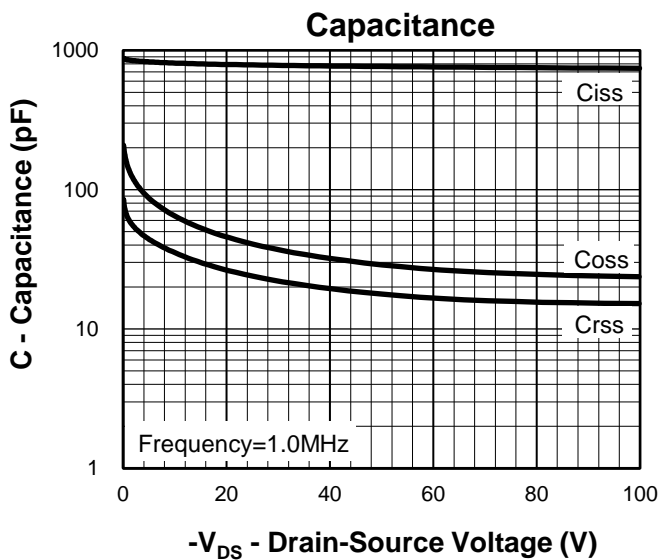
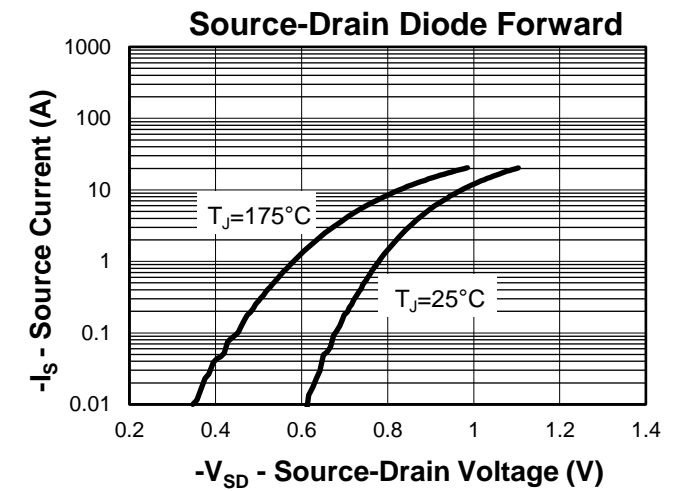
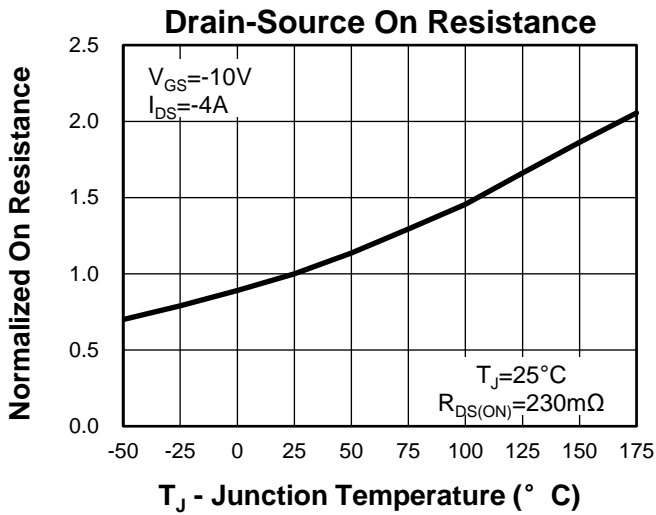
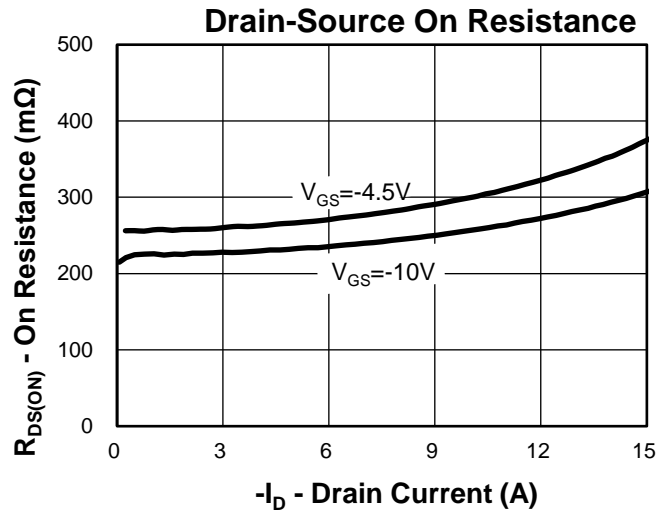
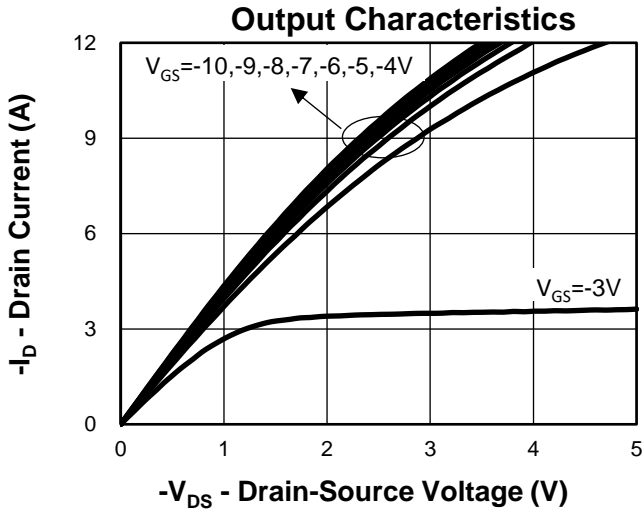
### Typical Characteristics

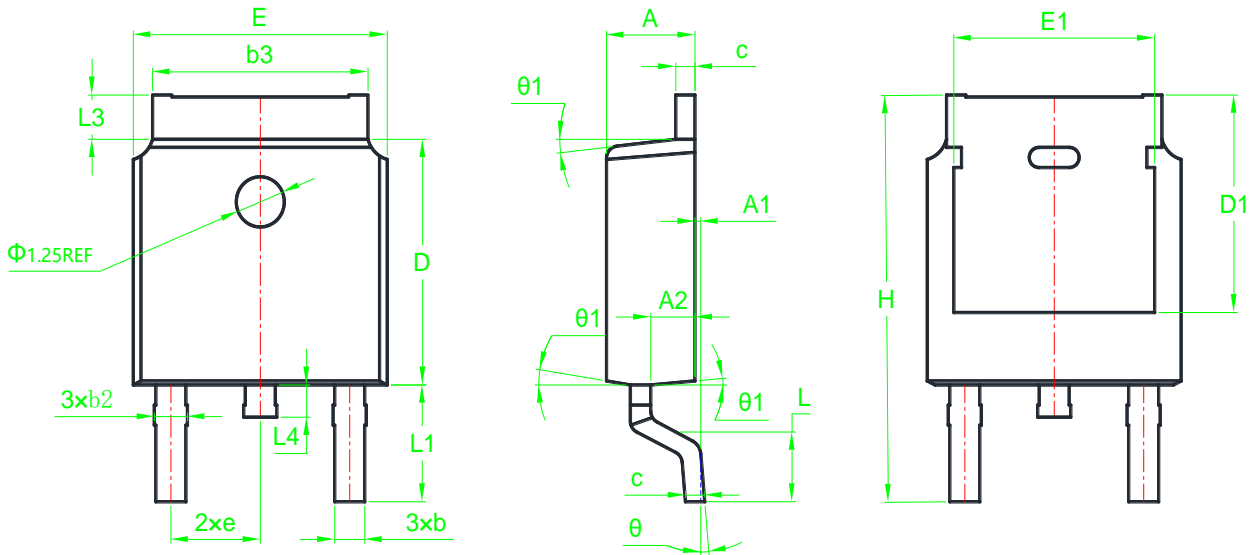


### Thermal Transient Impedance



Typical Characteristics

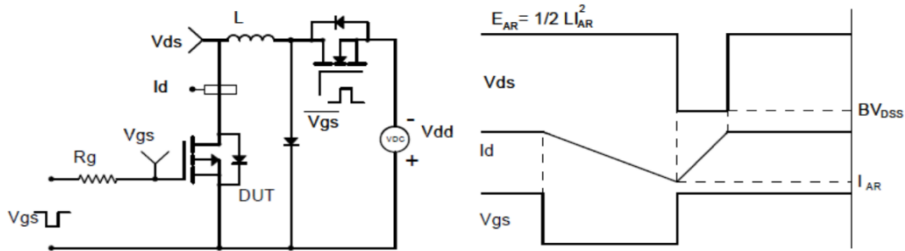


**Package Information**
**TO-252**


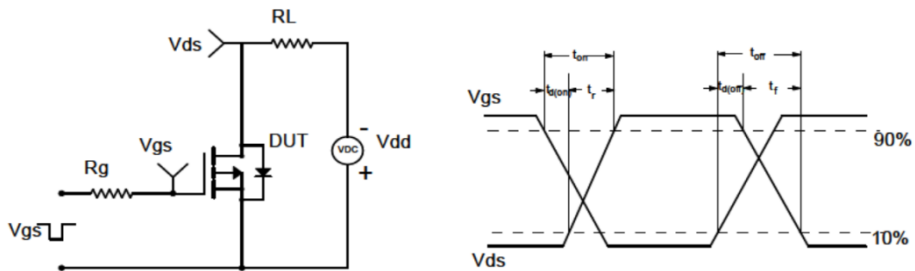
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.38	0.087	0.091	0.094	E	6.40	6.60	6.70	0.252	0.260	0.264
A1	0.00	*	0.15	0.000	*	0.006	E1	4.55	*	5.15	0.179	*	0.203
A2	0.90	1.00	1.10	0.035	0.039	0.043	H	9.60	10.10	10.40	0.378	0.398	0.409
b	0.65	0.75	0.85	0.026	0.030	0.033	L	1.40	1.50	1.70	0.055	0.059	0.067
b2	0.72	*	0.90	0.028	*	0.035	L1	2.90REF			0.114REF		
b3	5.13	5.33	5.46	0.202	0.210	0.215	L3	0.90	*	1.25	0.035	*	0.049
c	0.47	0.51	0.54	0.019	0.020	0.021	L4	0.60	*	1.00	0.024	*	0.039
D	6.00	6.10	6.20	0.236	0.240	0.244	$\theta$	0°	*	10°	0°	*	10°
D1	5.25	5.35	5.60	0.207	0.211	0.220	$\theta 1$	5°	*	9°	5°	*	9°
e	2.286BSC			0.090BSC									

Note: Dimensions do not inclusive burrs and mold flash.

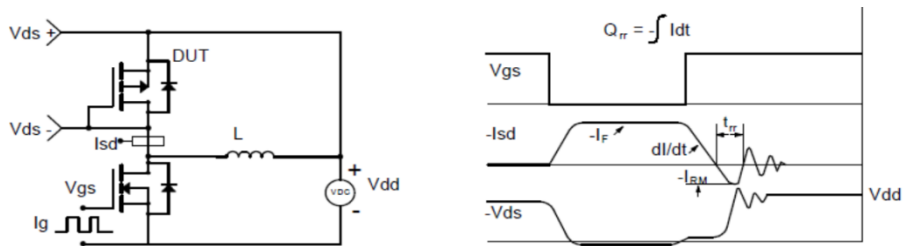
### Avalanche Test Circuit and Waveforms



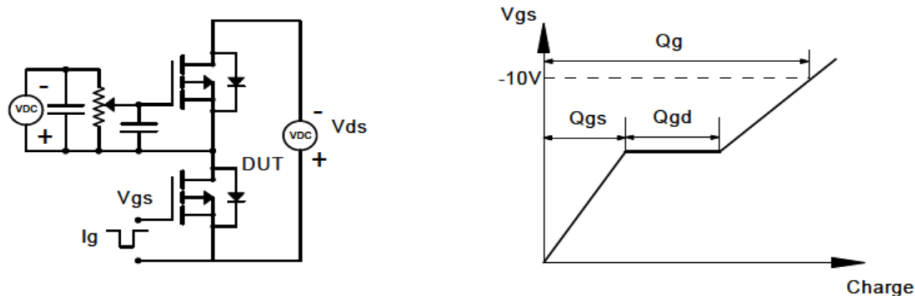
### Switching Time Test Circuit and Waveforms



### Diode Recovery Test Circuit and Waveforms



### Gate Charge Test Circuit and Waveform



### Customer Service

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