

## Features

- -150V/-1A,  
 $R_{DS(ON)} = 700m\Omega(Typ.)@V_{GS}=-10V$
- Fast Switching Speed
- Super High Dense Cell Design
- Reliable and Rugged

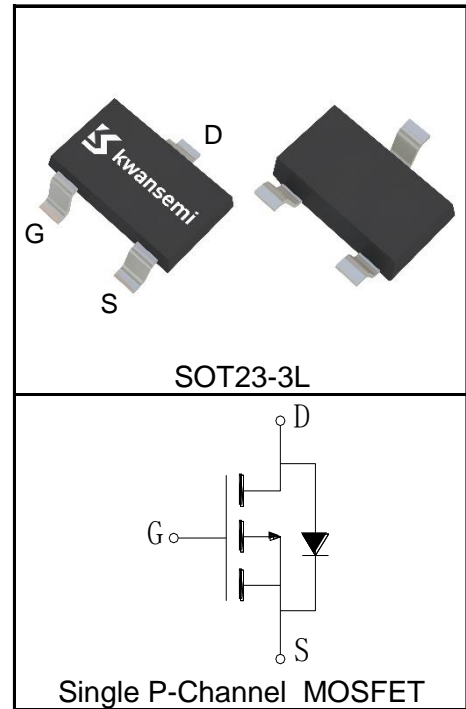
## Applications

- Load Switch



Halogen-Free

## Pin Description



## Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
<b>Common Ratings</b> ( $T_A=25^\circ\text{C}$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	-150	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$T_{Jmax}$	Maximum Junction Temperature	150	$^\circ\text{C}$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$I_S$	Diode Continuous Forward Current	$T_A=25^\circ\text{C}$ -1	A
<b>Mounted on Large Heat Sink</b>			
$I_{DP}^{①}$	300 $\mu\text{s}$ Pulse Drain Current Tested	$T_A=25^\circ\text{C}$ -4	A
$I_D^{②}$	Continuous Drain Current( $V_{GS}=-10V$ )	$T_A=25^\circ\text{C}$ -1	A
		$T_A=70^\circ\text{C}$ -0.8	
$P_D$	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 1.25	W
		$T_A=70^\circ\text{C}$ 0.8	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	60	$^\circ\text{C/W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C/W}$
<b>Drain-Source Avalanche Ratings</b>			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	110	mJ

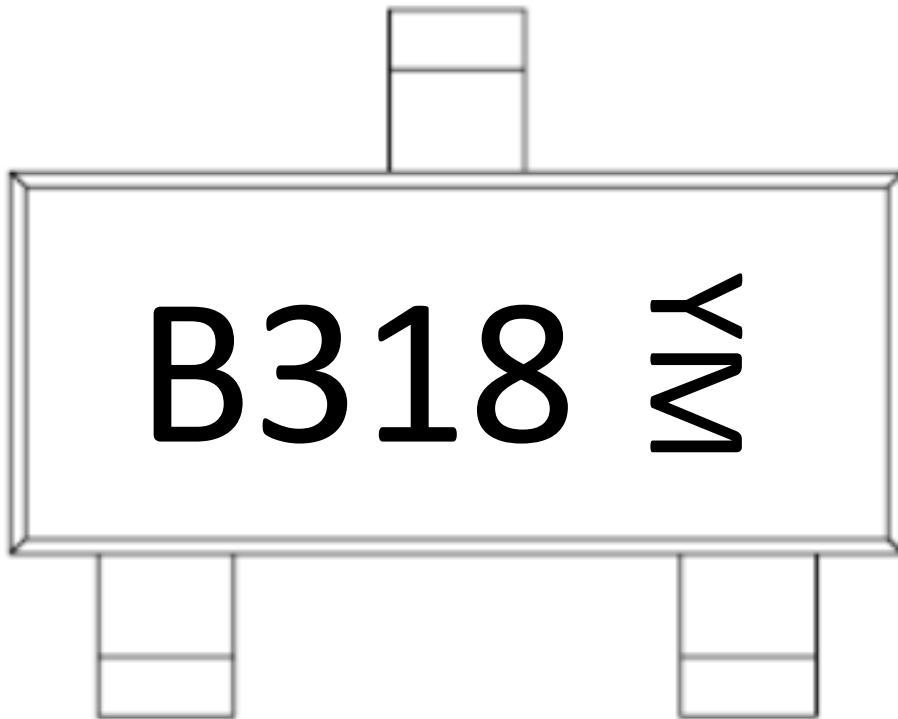
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KSB318EA			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-150			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-150V, V_{GS}=0V$			-1	$\mu A$
		$T_J=125^\circ C$			-100	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-2	-3	-4	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	$V_{GS}=-10V, I_{DS}=-1A$		700	800	$m\Omega$
		$V_{GS}=-6V, I_{DS}=-0.5A$		750	950	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=-1A, V_{GS}=0V$		-0.79	-1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=-1A, di_{SD}/dt=-100A/\mu s$		19		ns
$Q_{rr}$	Reverse Recovery Charge			23		nC
<b>Dynamic Characteristics<sup>(6)</sup></b>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		11		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-75V,$ Frequency=1.0MHz		665		pF
$C_{oss}$	Output Capacitance			15		
$C_{rss}$	Reverse Transfer Capacitance			10		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-75V, I_{DS}=-1A,$ $V_{GEN}=-10V, R_G=6\Omega$		8		ns
$t_r$	Turn-on Rise Time			15		
$t_{d(OFF)}$	Turn-off Delay Time			27		
$t_f$	Turn-off Fall Time			19		
<b>Gate Charge Characteristics<sup>(6)</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS}=-75V, V_{GS}=-10V,$ $I_{DS}=-1A$		11		nC
$Q_{gs}$	Gate-Source Charge			3.1		
$Q_{gd}$	Gate-Drain Charge			2.2		

- 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  $T_J = 25^\circ\text{C}$ ,  $I_{ASmax} = -2A$ ,  $L=55\text{mH}$ ,  $V_{DD} = -48V$ ,  $R_G = 25\Omega$ ,  $V_{GS} = -10V$ . Part not recommended for use above this value.
  - 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**

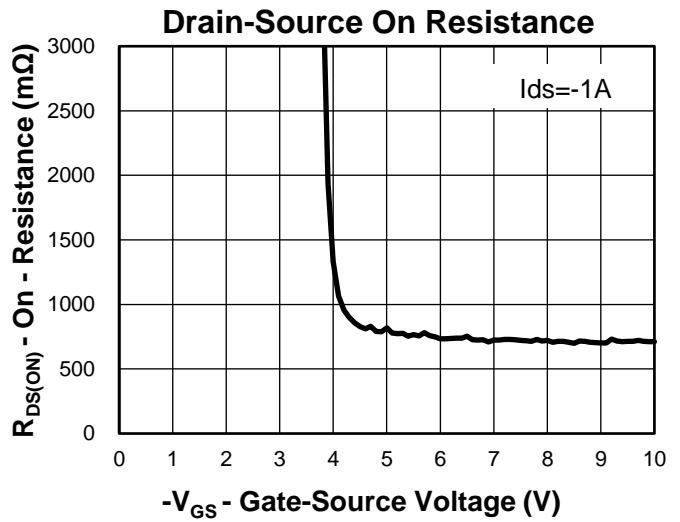
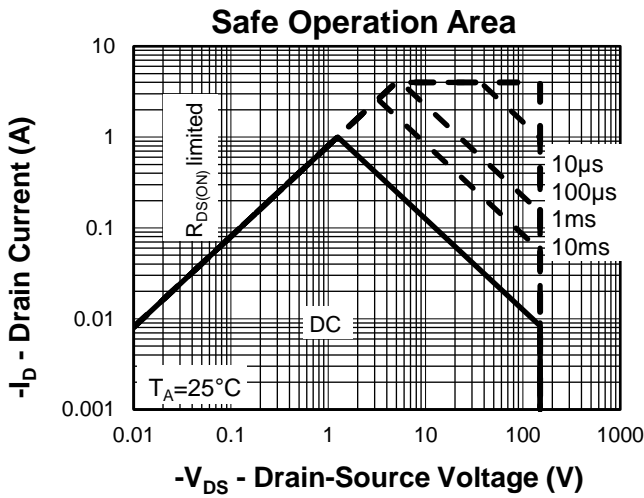
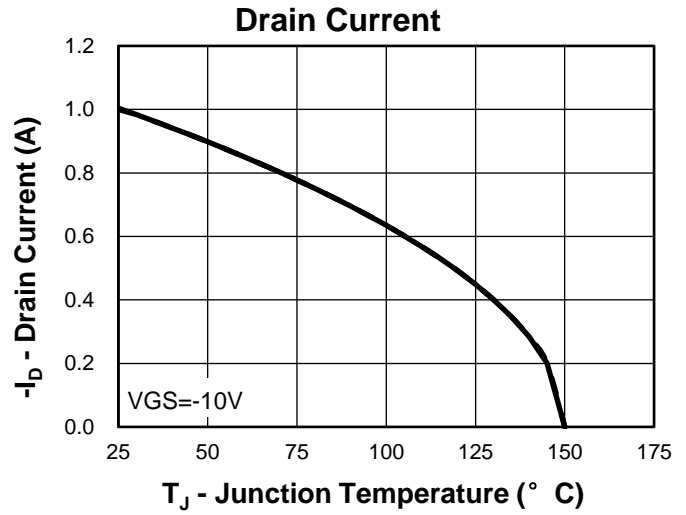
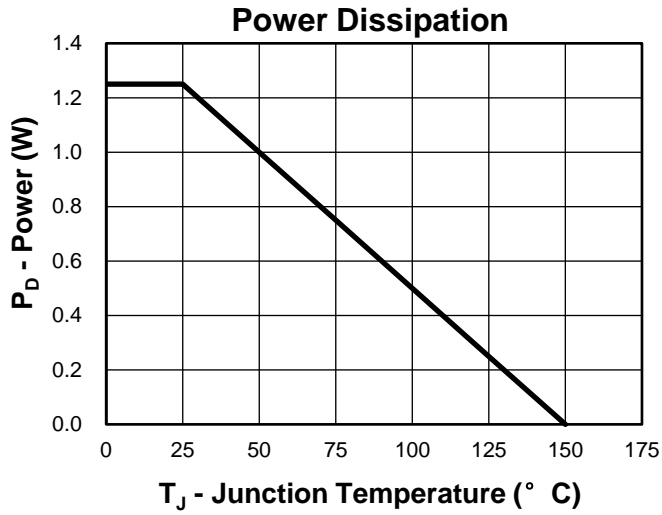
Device	Package	Packaging	Quantity	Reel Size	Tape width
KSB318EA	SOT23-3L	Tape&Reel	3000	7"	8mm



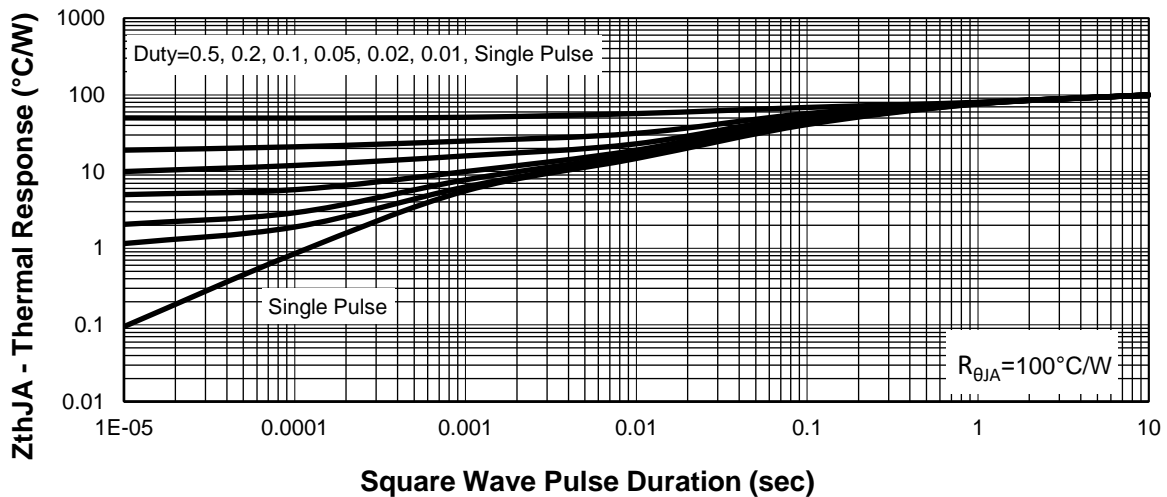
Y =Year,2017-A,2018-B,etc.

M =Month,Jan-1,Feb-2,....Sep-9,Oct-A,Nov-B,Dec-C.

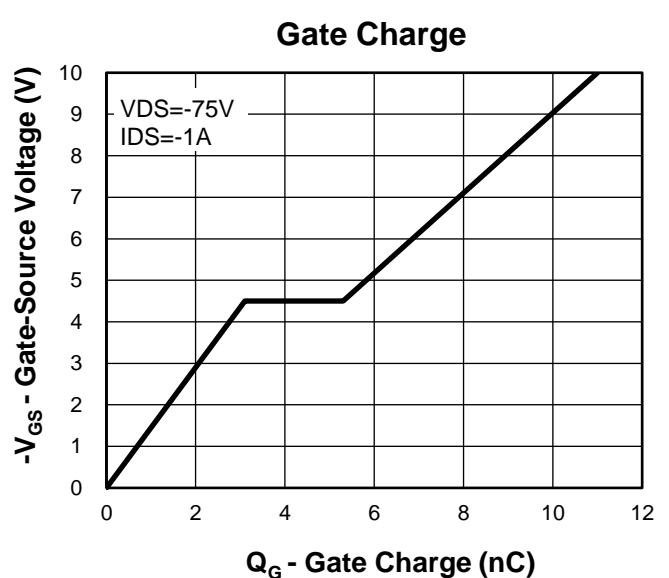
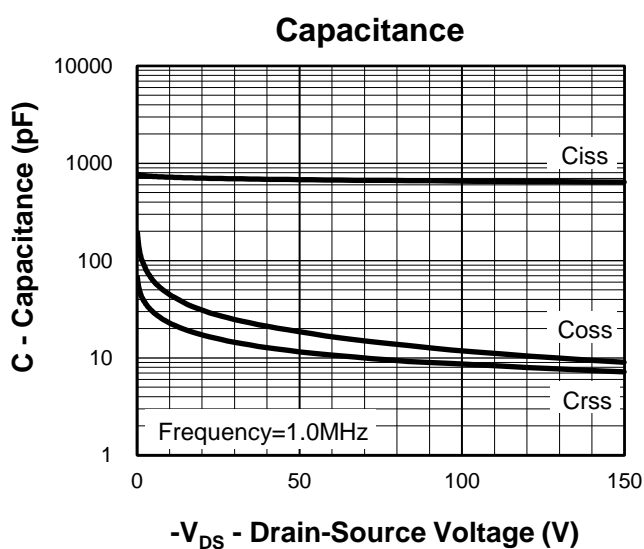
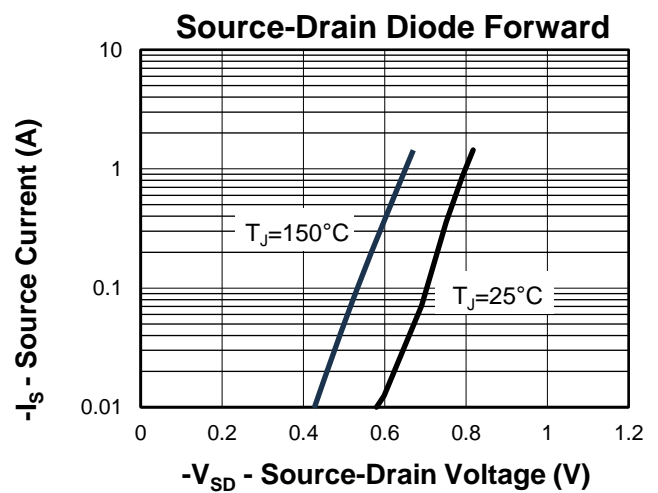
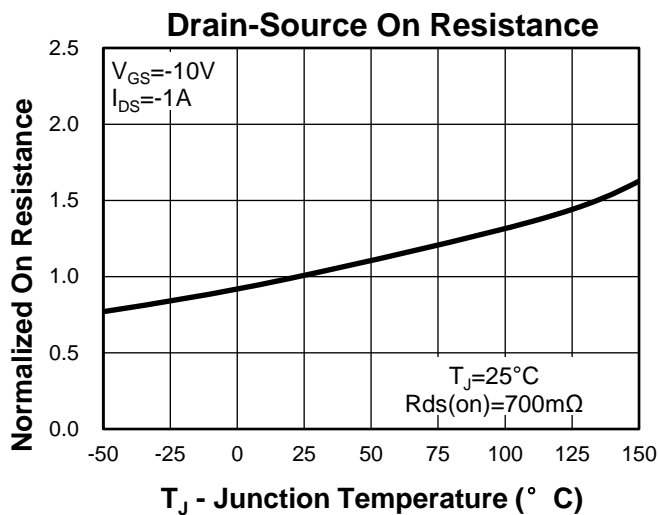
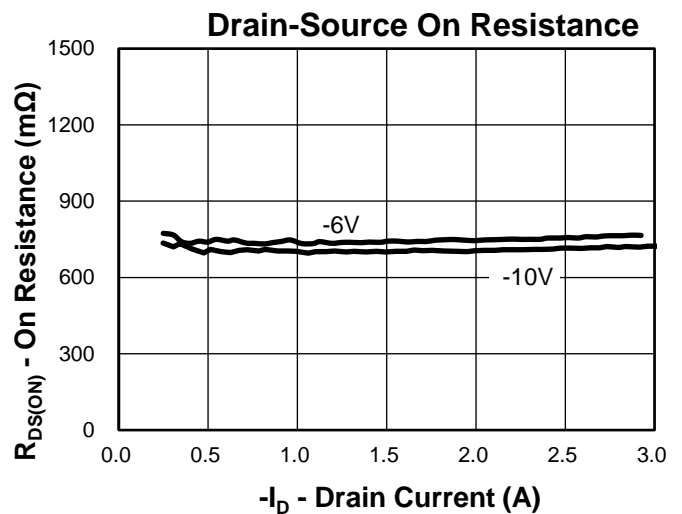
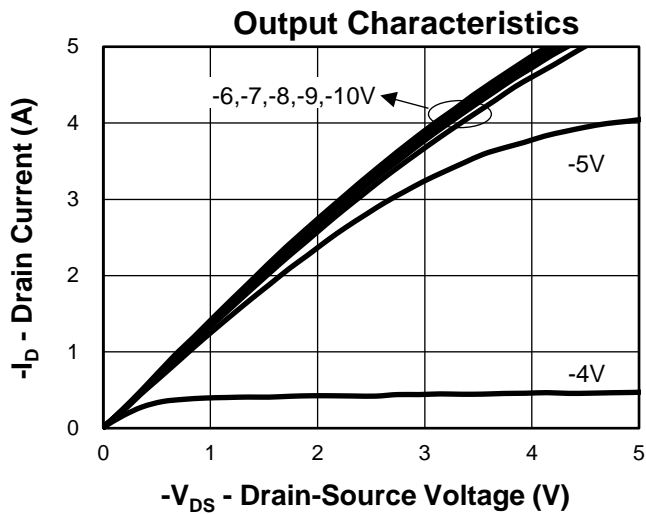
### Typical Characteristics

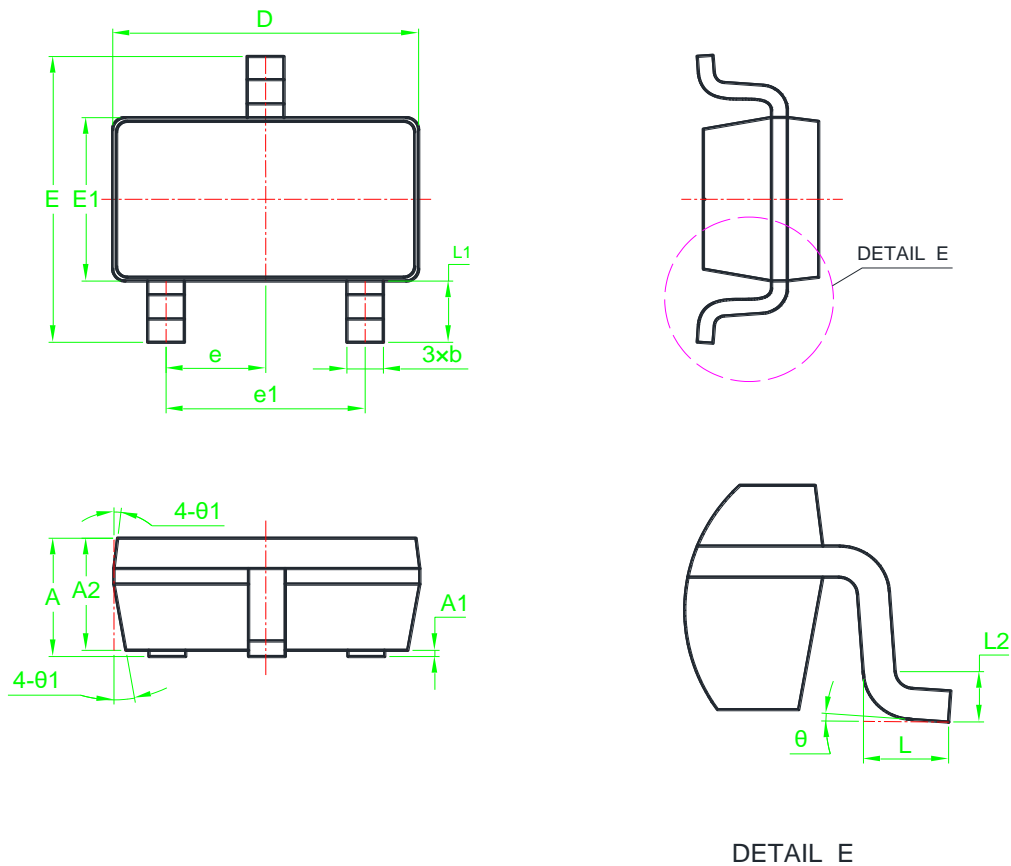


### Thermal Transient Impedance



Typical Characteristics

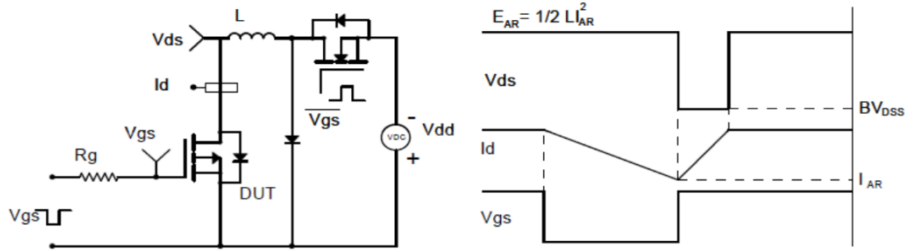


**Package Information**
**SOT23-3L**

**DETAIL E**

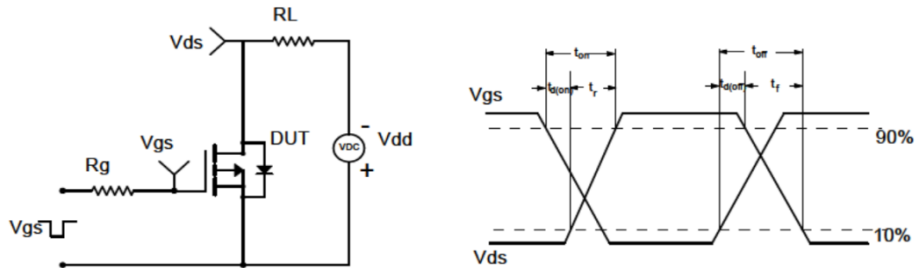
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	1.05	1.15	1.25	0.041	0.045	0.049	e	0.95BSC			0.037BSC		
A1	0.01	*	0.10	0.000	*	0.004	e1	1.9BSC			0.075BSC		
A2	1.05	1.10	1.15	0.041	0.043	0.045	L	0.30	0.45	0.60	0.012	0.018	0.024
b	0.30	0.40	0.50	0.012	0.016	0.020	L1	0.6REF			0.024REF		
D	2.82	2.92	3.02	0.111	0.115	0.119	L2	0.254BSC			0.01BSC		
E	2.65	2.80	2.95	0.104	0.110	0.116	θ	0°	*	8°	0°	*	8°
E1	1.50	1.60	1.70	0.059	0.063	0.067	θ 1	0°	*	10°	0°	*	10°

Note: Dimensions do not inclusive burrs and mold flash.

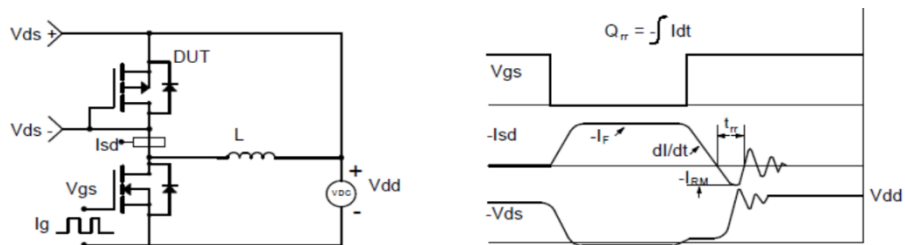
### Avalanche Test Circuit and Waveforms



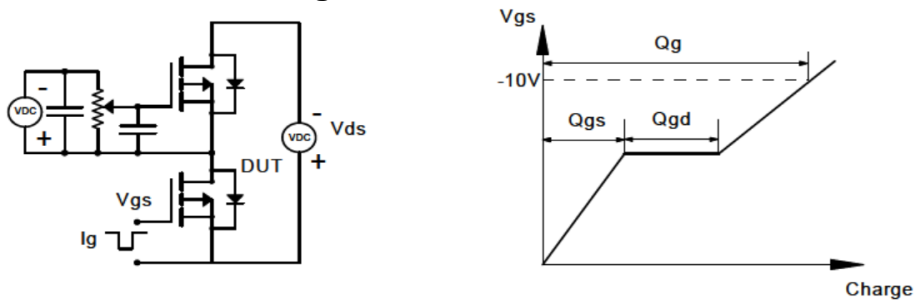
### Switching Time Test Circuit and Waveforms



### Diode Recovery Test Circuit and Waveforms



### Gate Charge Test Circuit and Waveform



### Customer Service

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