

Features

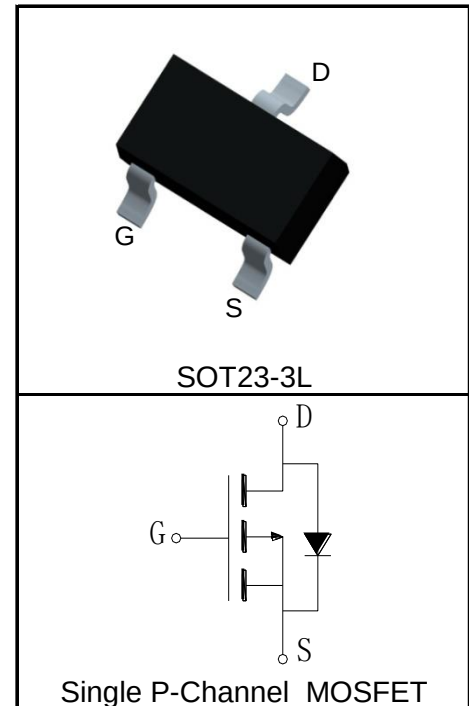
- -20V/-7A,
 $R_{DS(ON)} = 13m\Omega(Typ.)@V_{GS}=-4.5V$
 $R_{DS(ON)} = 16m\Omega(Typ.)@V_{GS}=-2.5V$
 $R_{DS(ON)} = 23m\Omega(Typ.)@V_{GS}=-1.8V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Applications

- Load Switch



Pin Description



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	-1.2	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _A =25°C	-28	A
I _D ^②	Continuous Drain Current(V _{GS} =-4.5V)	T _A =25°C	-7	A
		T _A =70°C	-5.6	
P _D	Maximum Power Dissipation	T _A =25°C	1.25	W
		T _A =70°C	0.8	
R _{qJL}	Thermal Resistance-Junction to Lead		60	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		TBD	mJ

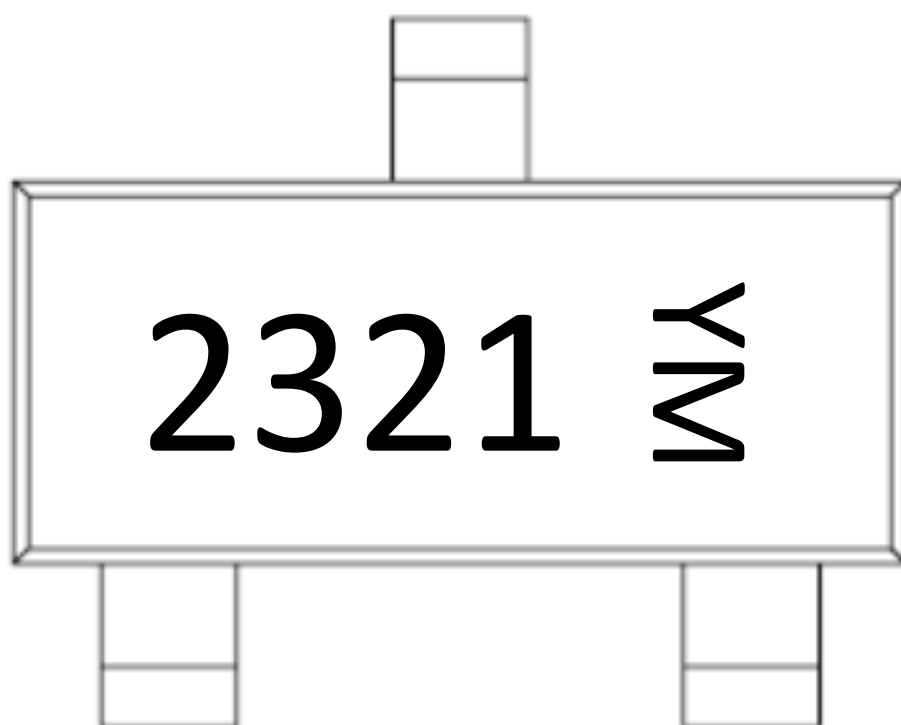
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS2321EA			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			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.4	-0.7	-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} =-4A		13	16	mΩ
		V _{GS} =-2.5V, I _{DS} =-3A		16	22	mΩ
		V _{GS} =-1.8V, I _{DS} =-2A		23	34	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =-4A, V _{GS} =0V		-0.83	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-4A, dI _{SD} /dt=-100A/μs		10		ns
Q _{rr}	Reverse Recovery Charge			19		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		4.5		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz		950		pF
C _{oss}	Output Capacitance			165		
C _{rss}	Reverse Transfer Capacitance			90		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, I _{DS} =-4A, V _{GEN} =-4.5V, R _G =6Ω		12		ns
t _r	Turn-on Rise Time			25		
t _{d(OFF)}	Turn-off Delay Time			44		
t _f	Turn-off Fall Time			21		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-4A		14		nC
Q _{gs}	Gate-Source Charge			3.6		
Q _{gd}	Gate-Drain Charge			4.9		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 6.5A.
 - 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 $T_J = 25^{\circ}\text{C}$.
 - 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

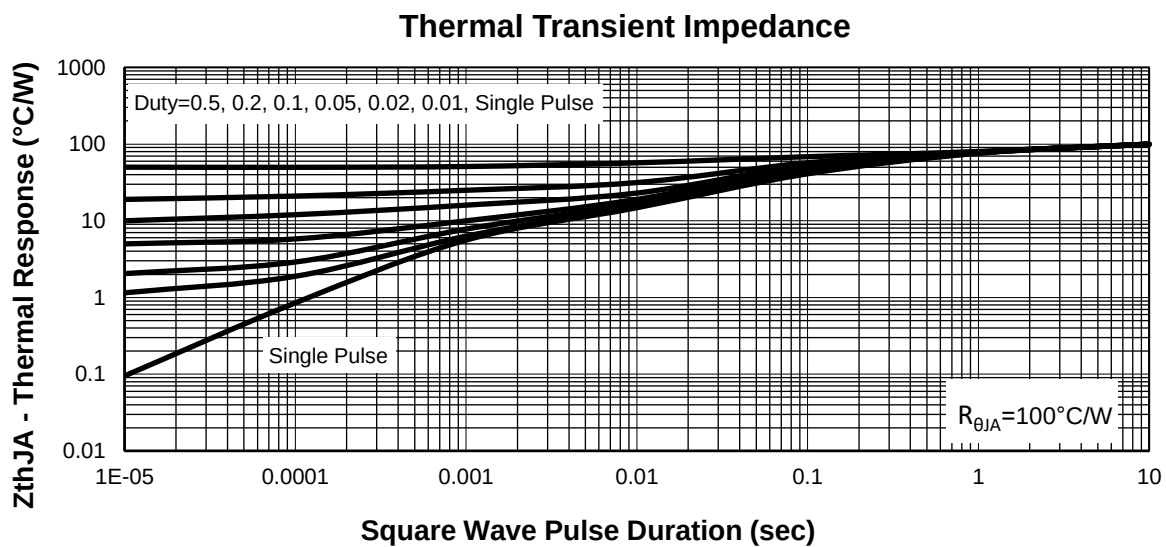
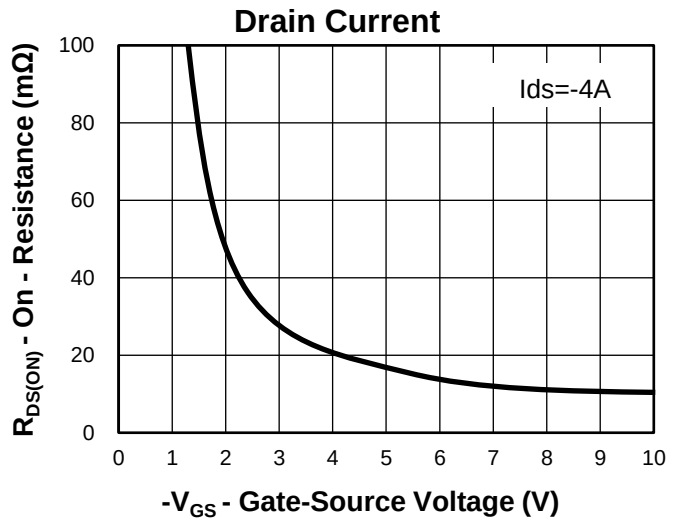
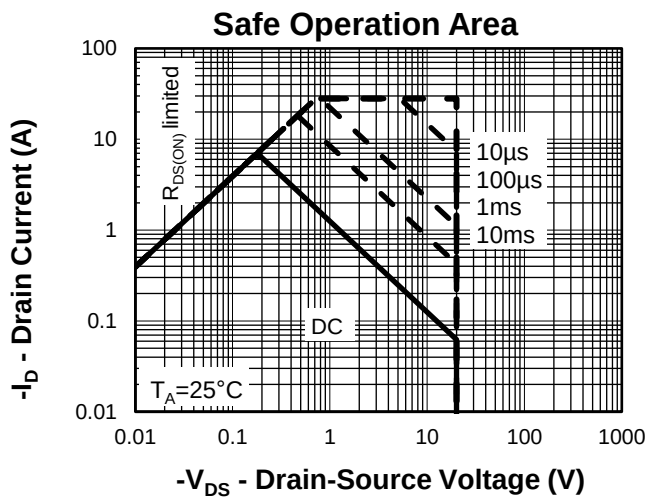
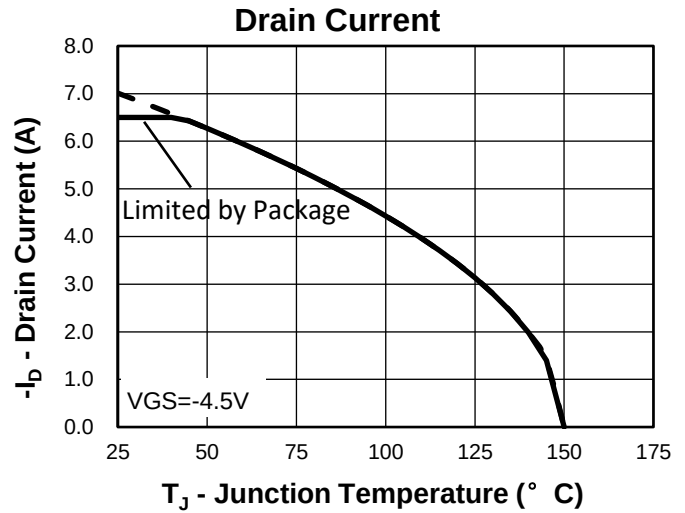
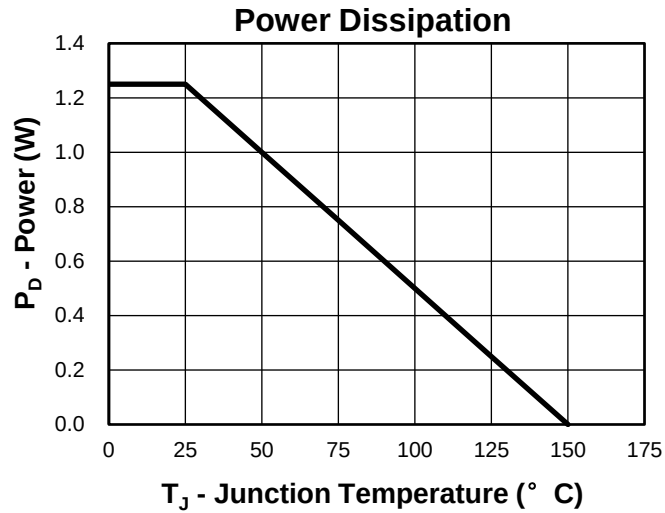
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS2321EA	SOT23-3L	Tape&Reel	3000	7"	8mm



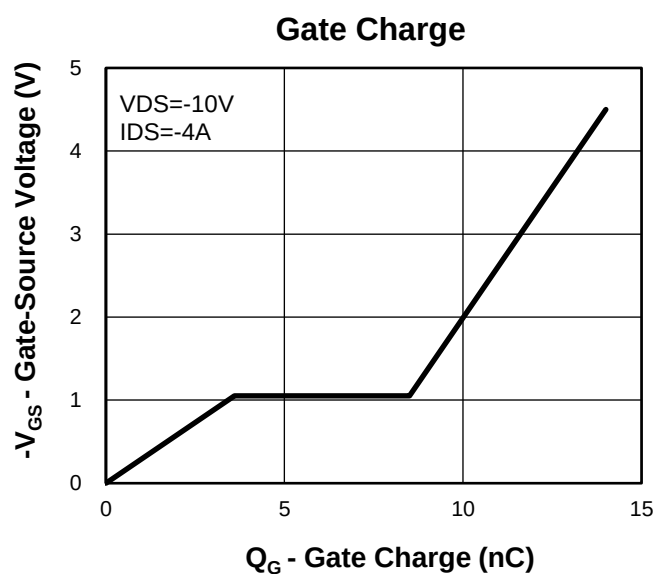
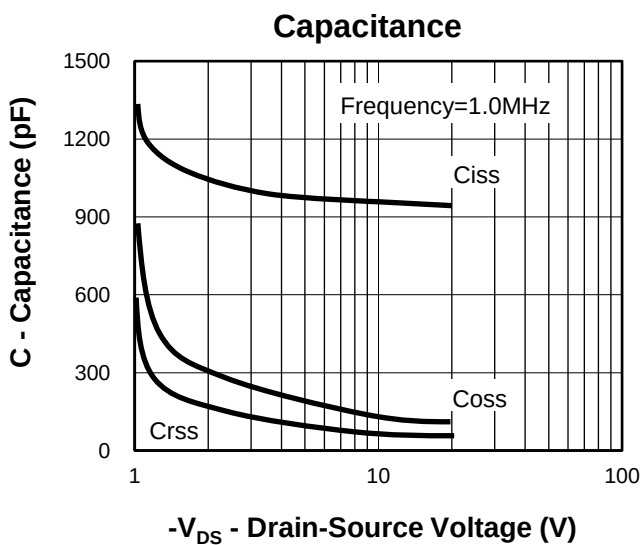
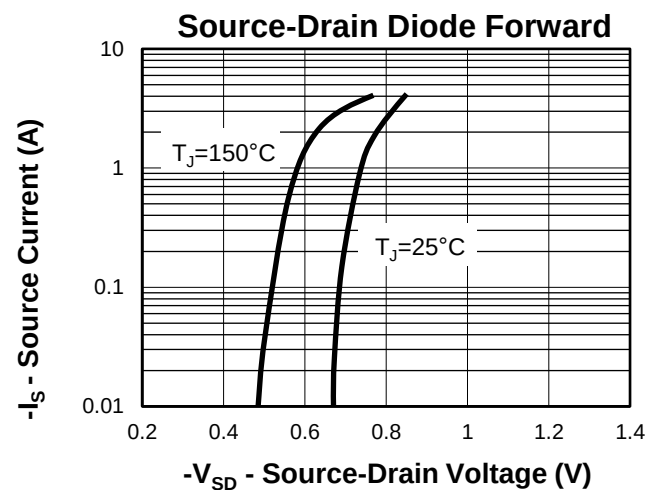
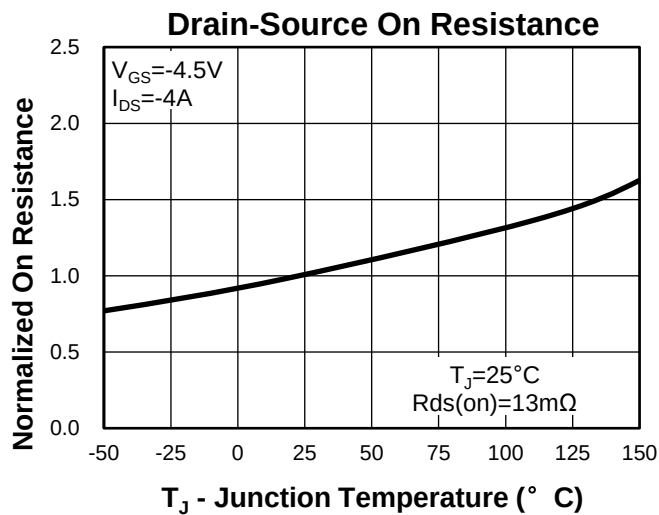
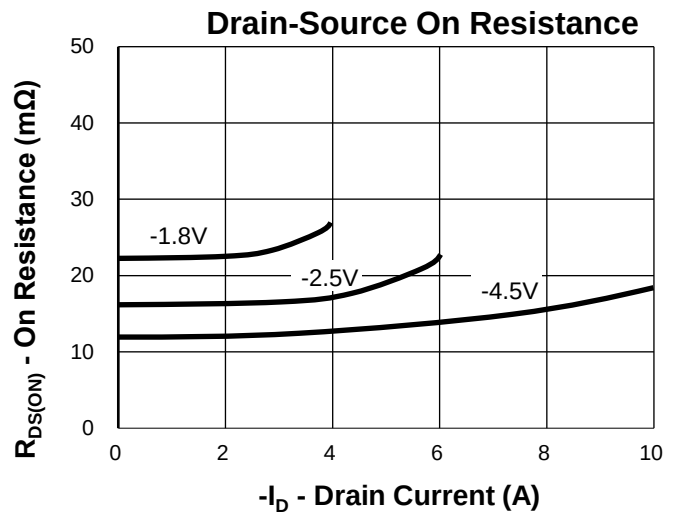
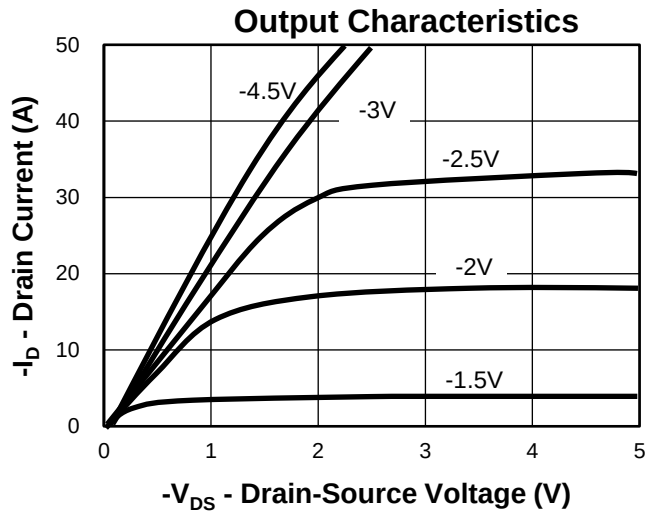
Y =Year,2017-A,2018-B,etc.

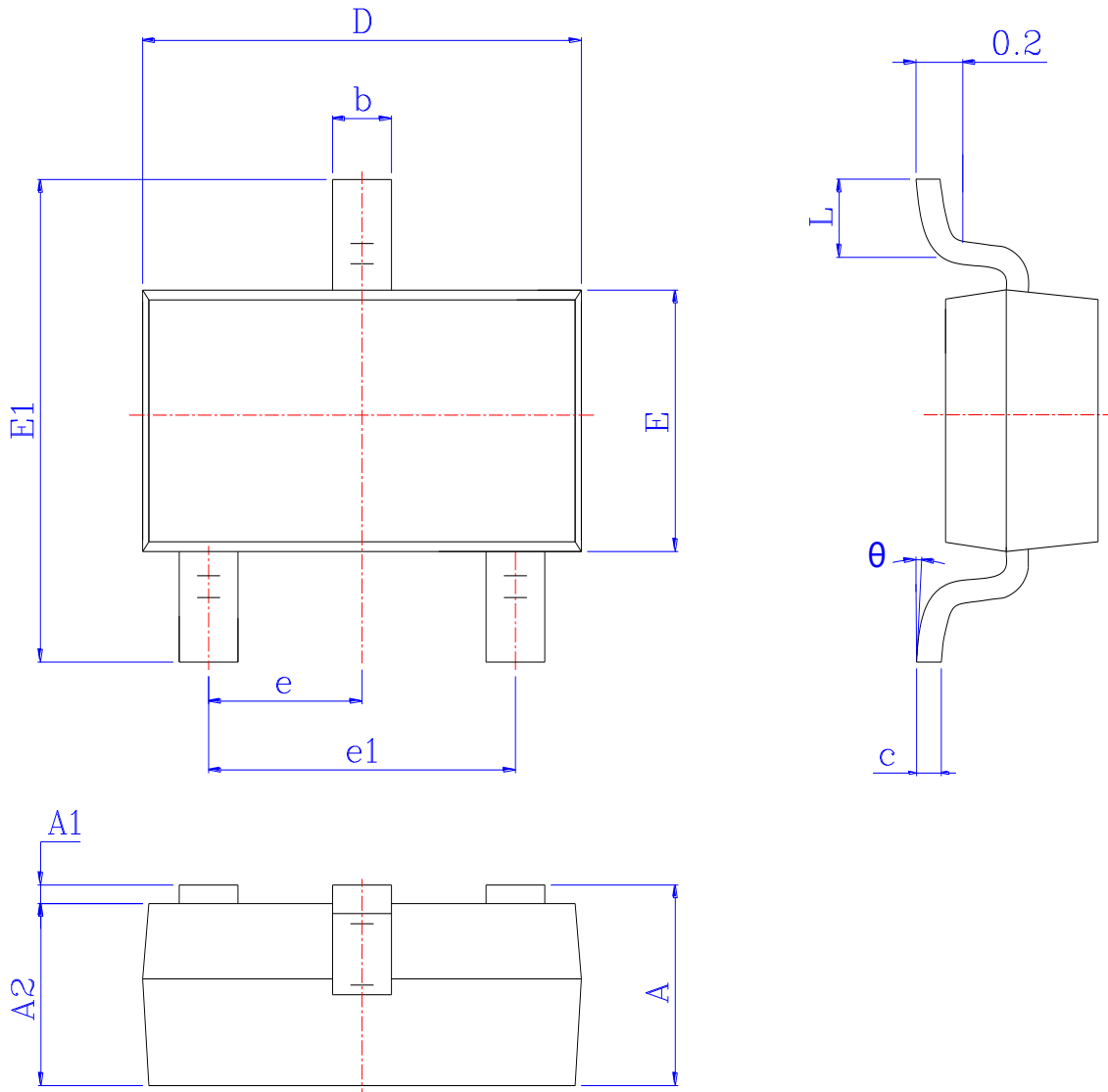
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Typical Characteristics



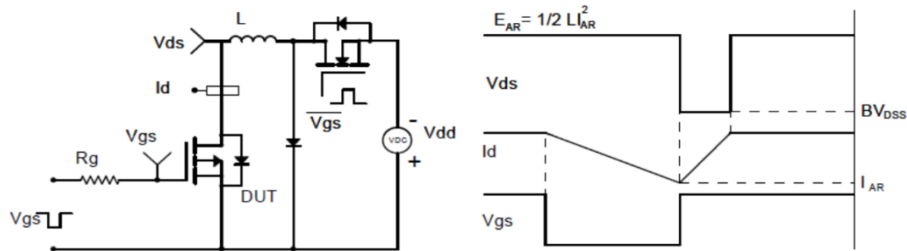
Typical Characteristics



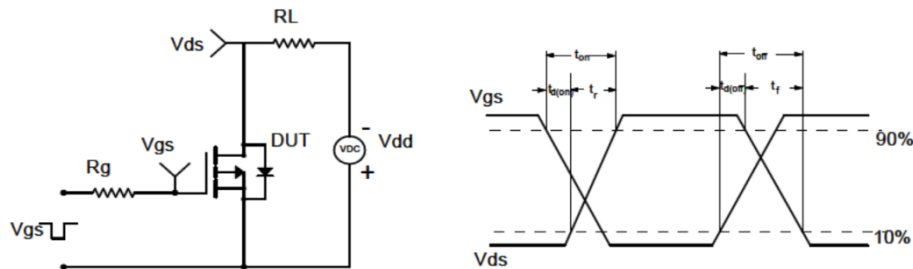
Package Information
SOT23-3L


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.950	1.150	1.450	0.037	0.045	0.057
A1	0.000	*	0.150	0.000	*	0.006
A2	0.900	1.100	1.300	0.035	0.043	0.051
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.080	0.150	0.200	0.003	0.006	0.008
D	2.800	2.925	3.050	0.110	0.115	0.120
E	1.500	1.600	1.750	0.059	0.063	0.069
E1	2.650	2.800	3.000	0.104	0.110	0.118
e	0.950 BSC			0.037 BSC		
e1	1.800	1.900	2.000	0.071	0.075	0.079
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°

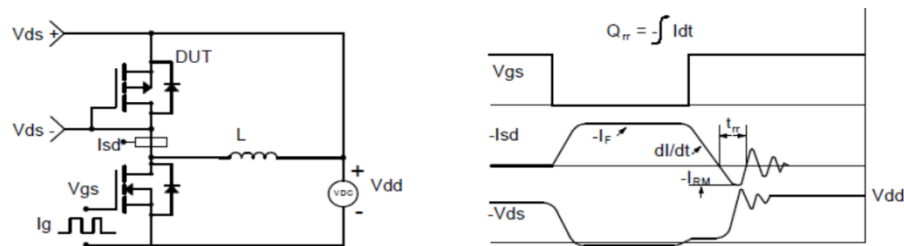
Avalanche Test Circuit and Waveforms



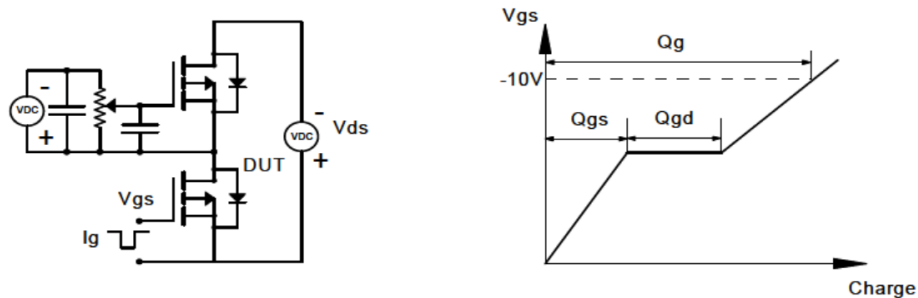
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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