

Features

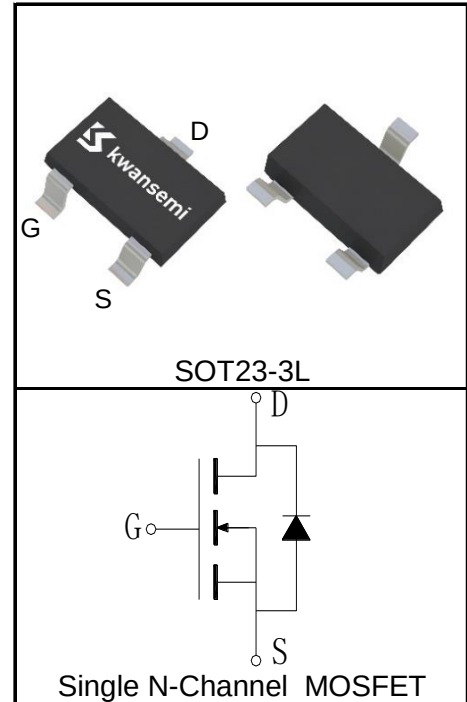
- 40V/6.4A,
 $R_{DS(ON)} = 14m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 18m\Omega(Typ.)@V_{GS}=4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Applications

- Load Switch



Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	40	V
V_{GSS}	Gate-Source Voltage	± 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	$T_A=25^\circ\text{C}$ 1.5	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	Pulse Drain Current	$T_A=25^\circ\text{C}$ 25	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_A=25^\circ\text{C}$ 6.4	A
		$T_A=70^\circ\text{C}$ 5.1	
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 1.3	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	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	49	mJ

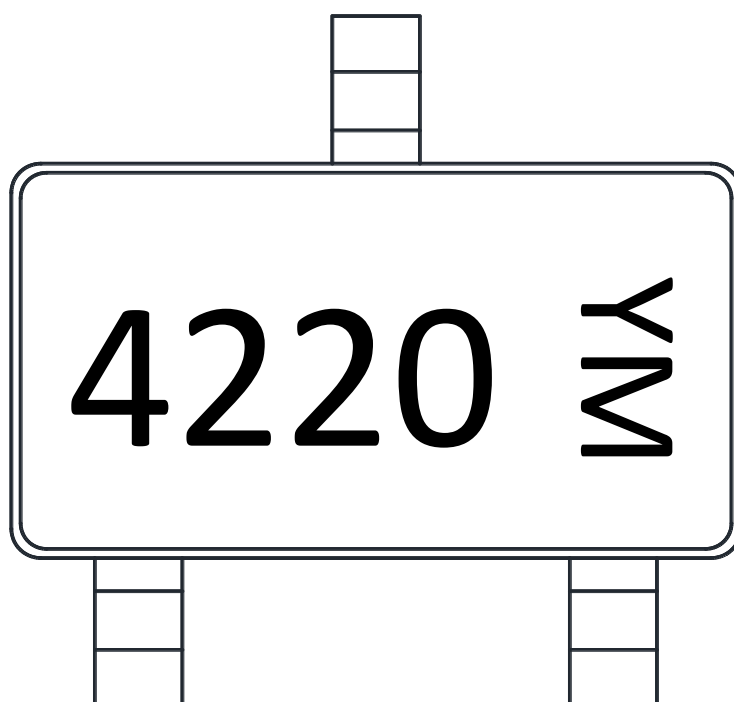
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS4220EA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.1	1.7	2.3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =6A		14	19	mΩ
		V _{GS} =4.5V, I _{DS} =4A		18	25	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =6A, V _{GS} =0V		0.83	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =6A, dI _{SD} /dt=100A/μs		10		ns
Q _{rr}	Reverse Recovery Charge			7		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		3.5		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz		1155		pF
C _{oss}	Output Capacitance			85		
C _{rss}	Reverse Transfer Capacitance			75		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, I _{DS} =6A, V _{GEN} =10V, R _G =6Ω		7		ns
t _r	Turn-on Rise Time			11		
t _{d(OFF)}	Turn-off Delay Time			23		
t _f	Turn-off Fall Time			6		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =6A		23		nC
Q _{gs}	Gate-Source Charge			3		
Q _{gd}	Gate-Drain Charge			4.6		

- 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 $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = 14A$, $L = 0.5\text{mH}$, $V_{DD} = 24V$, $R_G = 25\Omega$, $V_{GS} = 10V$. 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

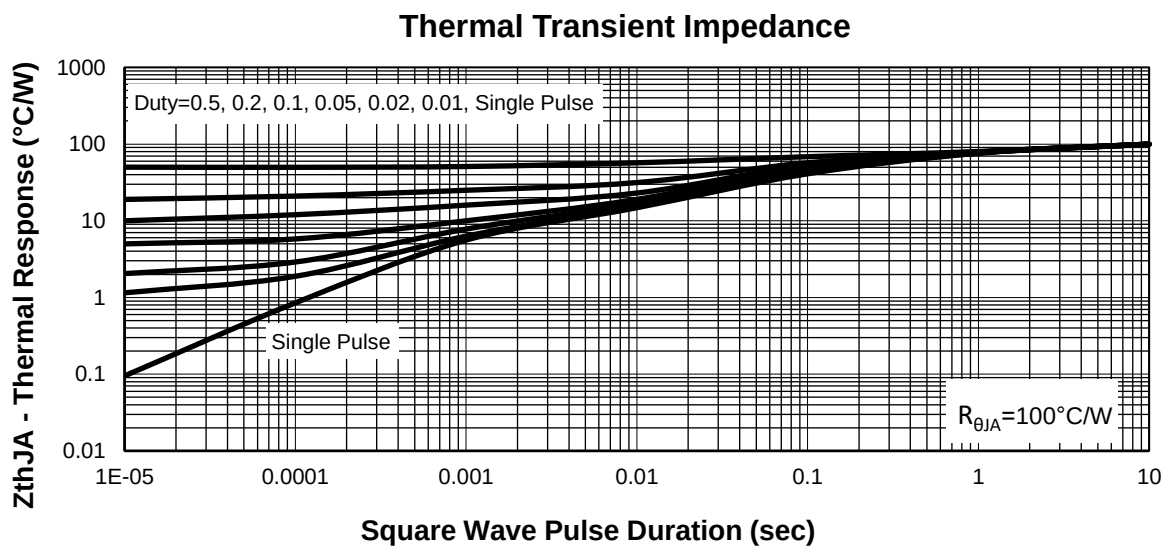
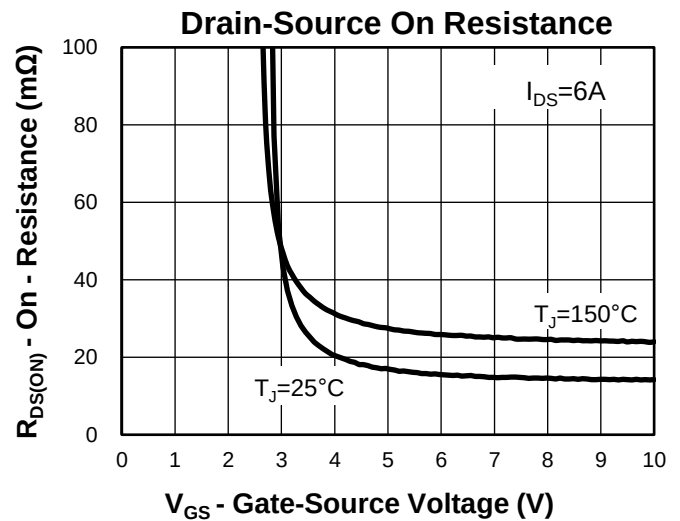
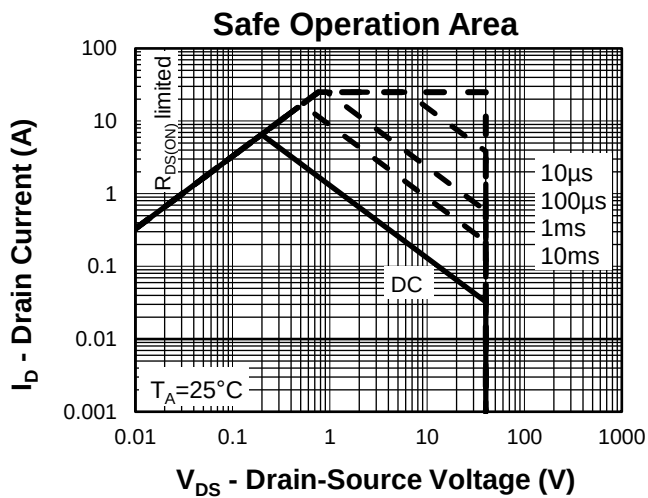
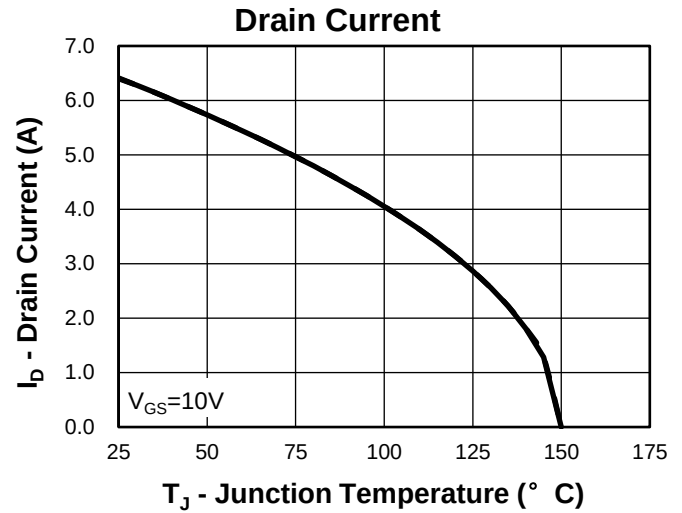
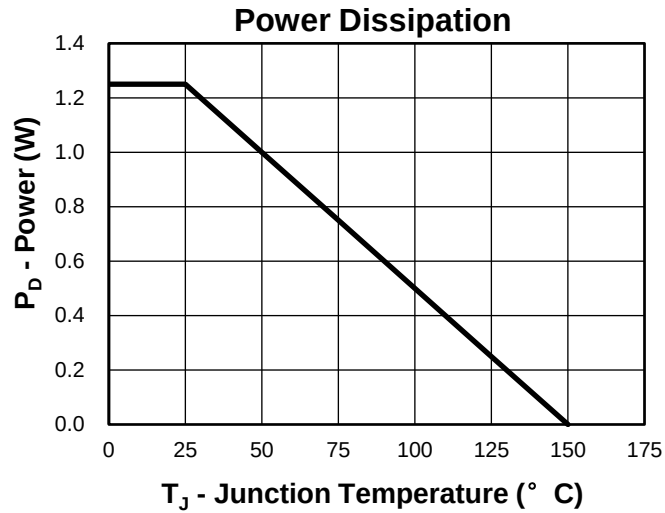
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS4220EA	SOT23-3L	Tape&Reel	3000	7"	8mm



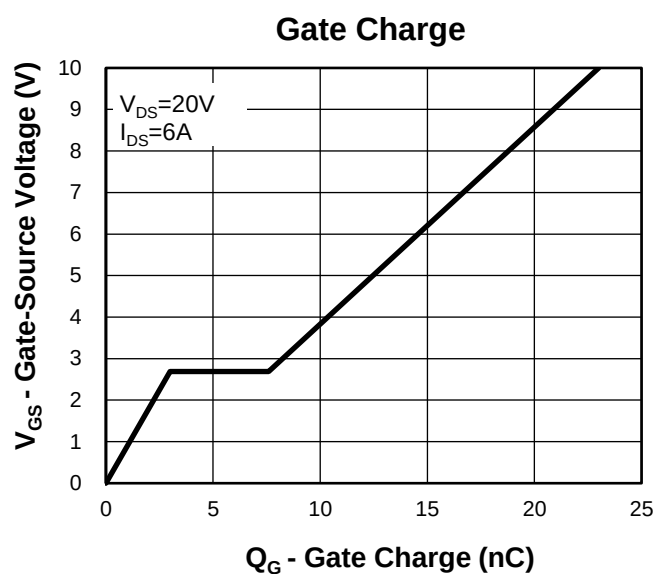
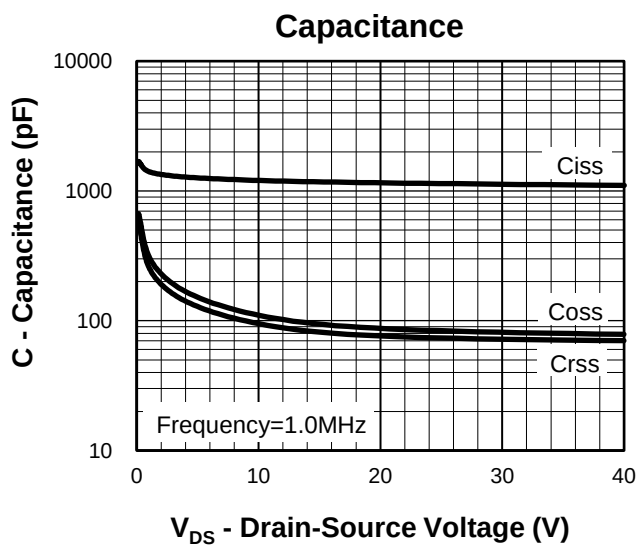
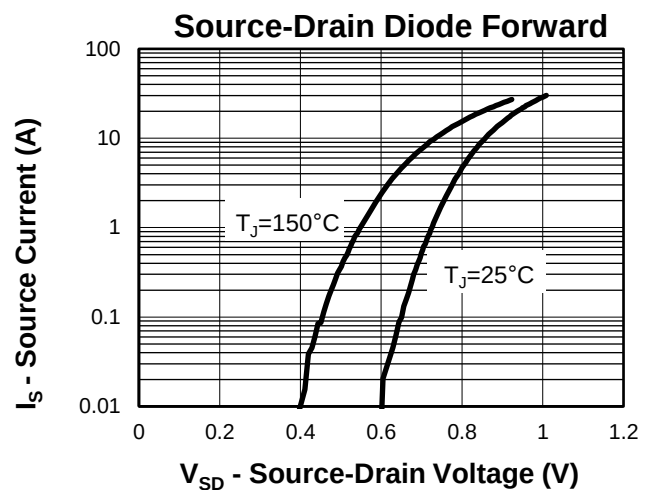
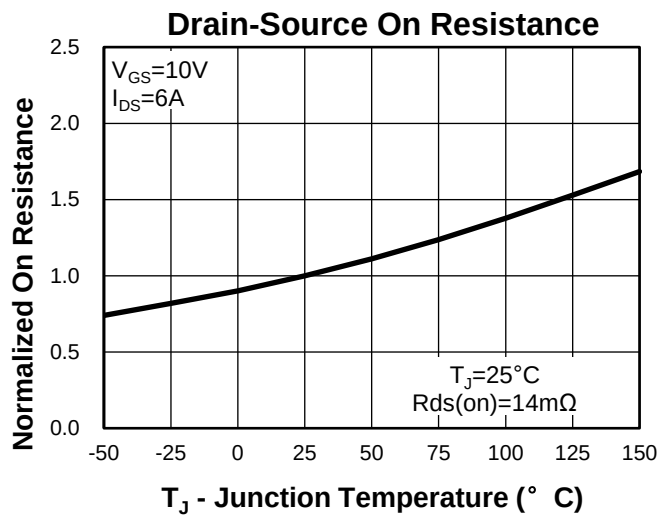
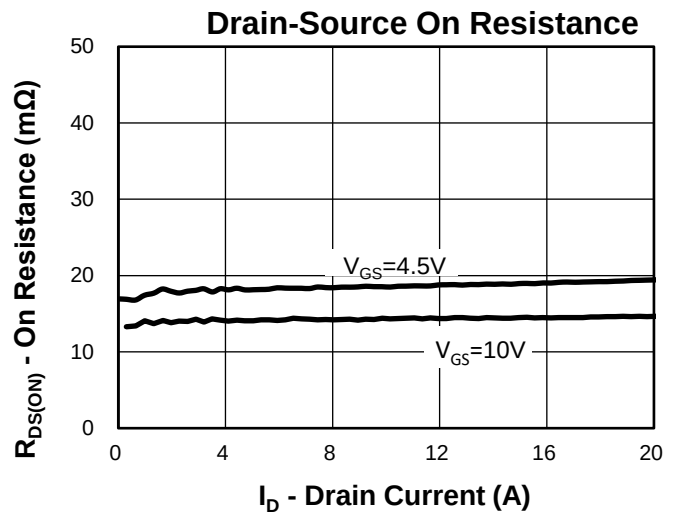
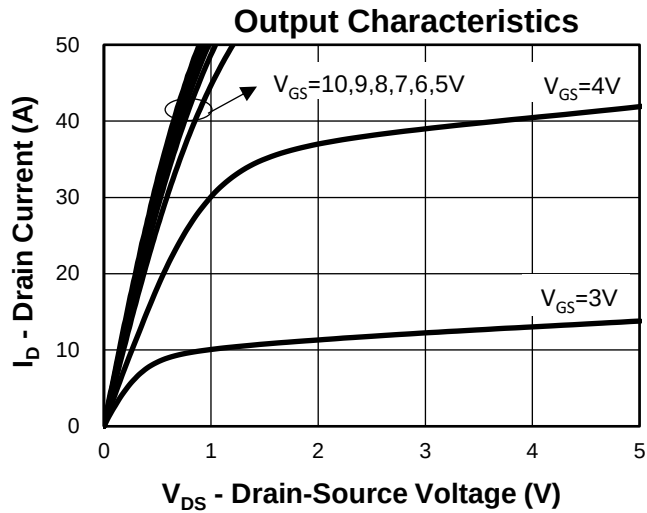
Y =Year,2017-A,2018-B,etc.

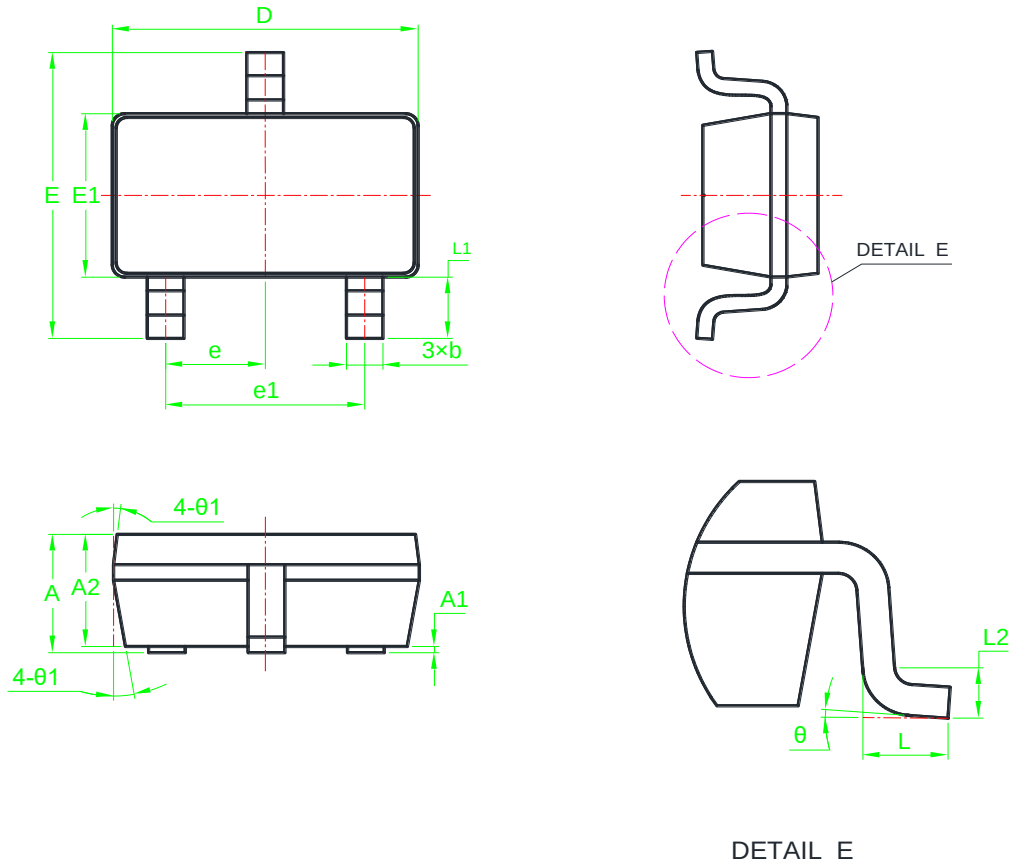
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Typical Characteristics



Typical Characteristics

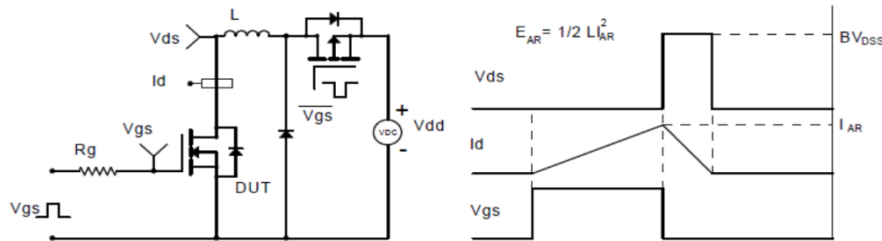


Package Information
SOT23-3L


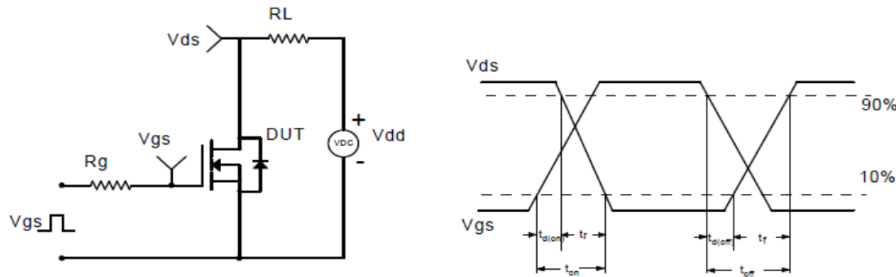
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	1.05	1.15	1.25	0.041	0.045	0.049	e	0.95BSC			0.037BSC		
A1	0.01	*	0.10	0.000	*	0.004	e1	1.9BSC			0.075BSC		
A2	1.05	1.10	1.15	0.041	0.043	0.045	L	0.30	0.45	0.60	0.012	0.018	0.024
b	0.30	0.40	0.50	0.012	0.016	0.020	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.

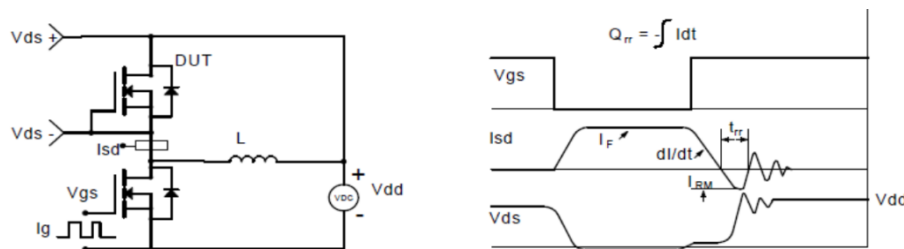
Avalanche Test Circuit and Waveforms



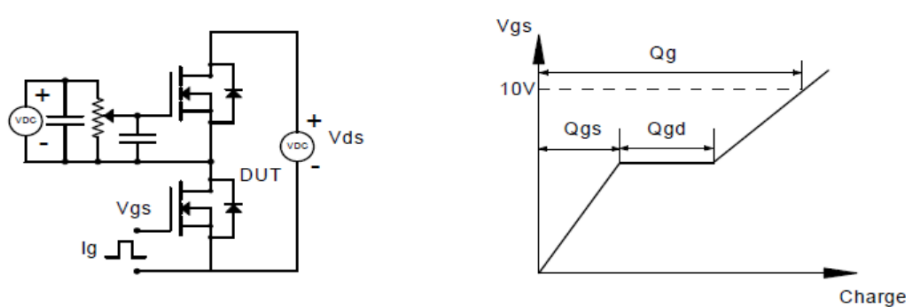
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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