

Features

- 150V/220A,
 $R_{DS(ON)} = 4m\Omega (Typ.) @ V_{GS} = 10V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- High Ruggedness
- 100% Avalanche Tested

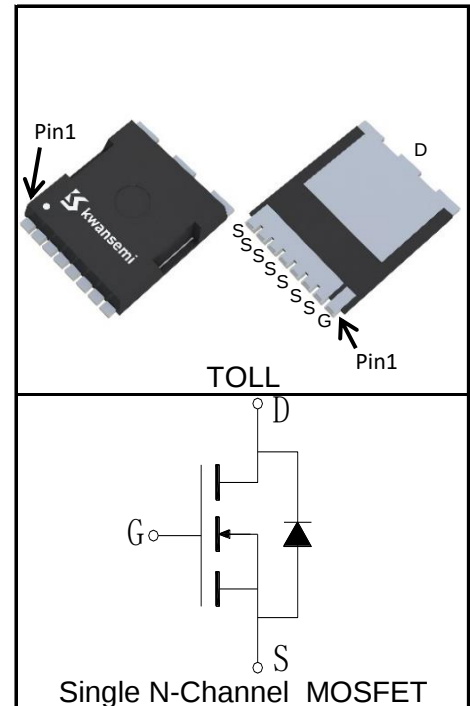
Applications

- Motor Control
- Battery Power Management



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		150	V
V _{GSS}	Gate-Source Voltage		±20	
T _{Jmax}	Maximum Junction Temperature		175	°C
T _J ,T _{STG}	Operating and Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	220	A
Mounted on Large Heat Sink				
I _{DP} ^①	Pulse Drain Current	T _C =25°C	880	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	220	A
		T _C =100°C	155	
P _D	Maximum Power Dissipation	T _C =25°C	535	W
		T _C =100°C	267	
R _{θJC}	Thermal Resistance-Junction to Case		0.28	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		40	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		1806	mJ

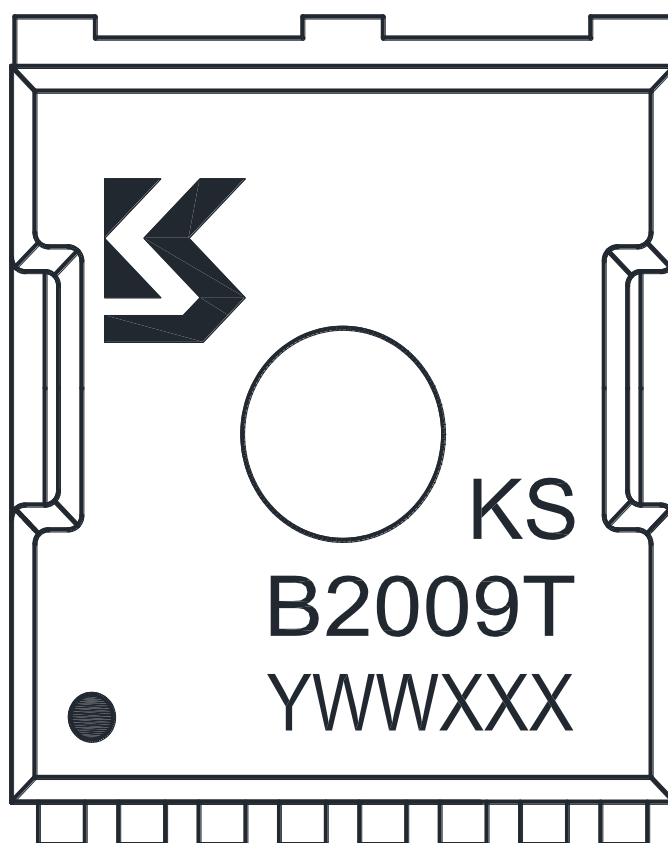
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	150			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =150V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3.2	4	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} =40A		4	4.8	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V		0.77	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs		49		ns
Q _{rr}	Reverse Recovery Charge			76		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =75V, Frequency=200KHz		3415		pF
C _{oss}	Output Capacitance			720		
C _{rss}	Reverse Transfer Capacitance			15		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =75V, I _{DS} =40A, V _{GEN} =10V, R _G =3Ω		21		ns
t _r	Turn-on Rise Time			23		
t _{d(OFF)}	Turn-off Delay Time			56		
t _f	Turn-off Fall Time			18		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =75V, V _{GS} =10V, I _{DS} =40A		52		nC
Q _{gs}	Gate-Source Charge			15		
Q _{gd}	Gate-Drain Charge			13		

- 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 $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = 85A$, $L = 0.5\text{mH}$, $V_{DD} = 48V$, $R_G = 25\Omega$, $V_{GS} = 10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = 60A$, $L = 0.5\text{mH}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

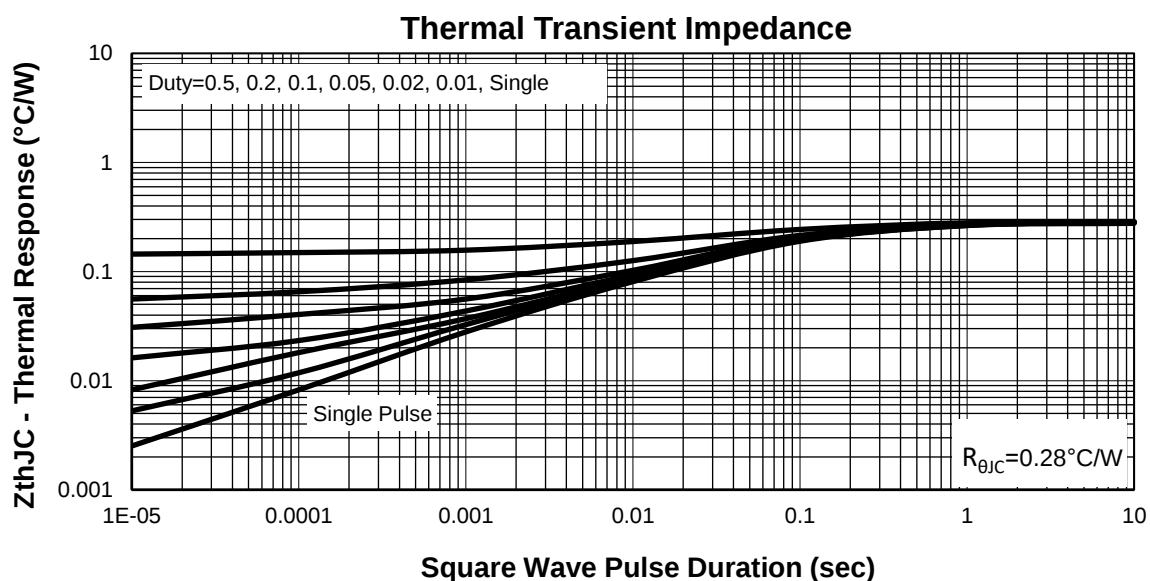
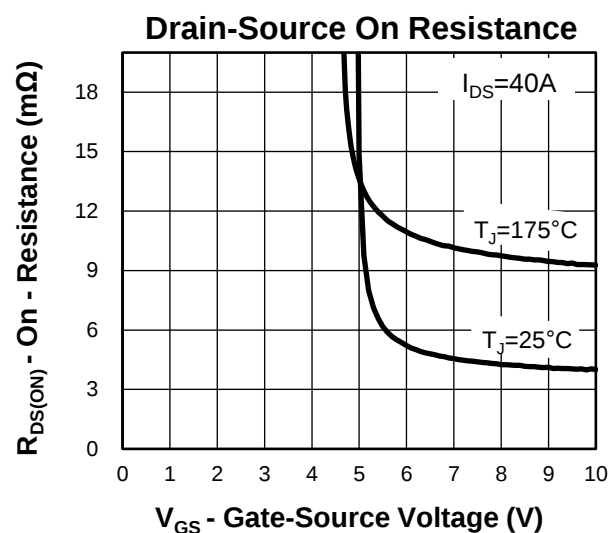
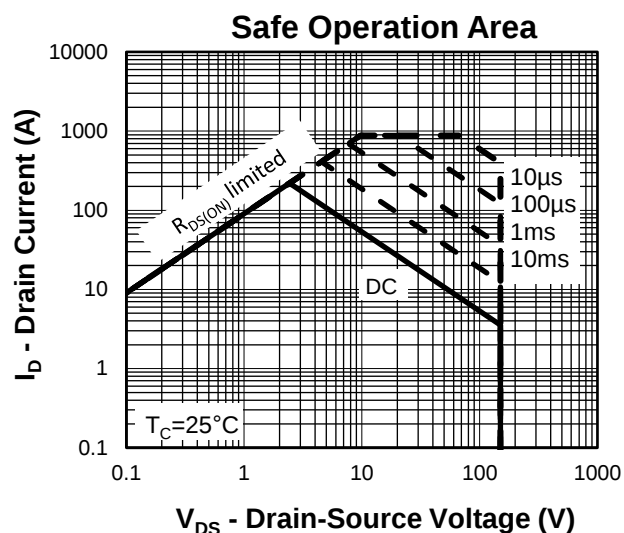
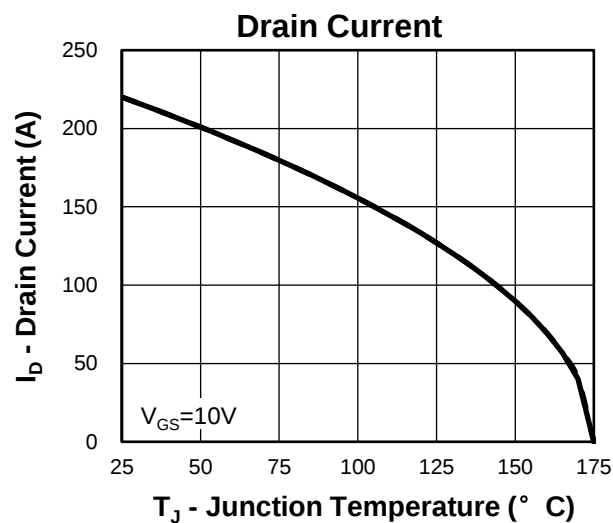
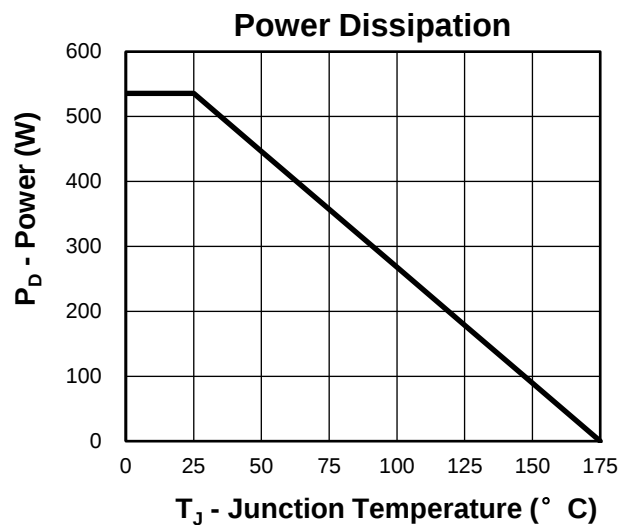
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KSB2009LAT	TOLL	Tape&Reel	2000	13"	24mm

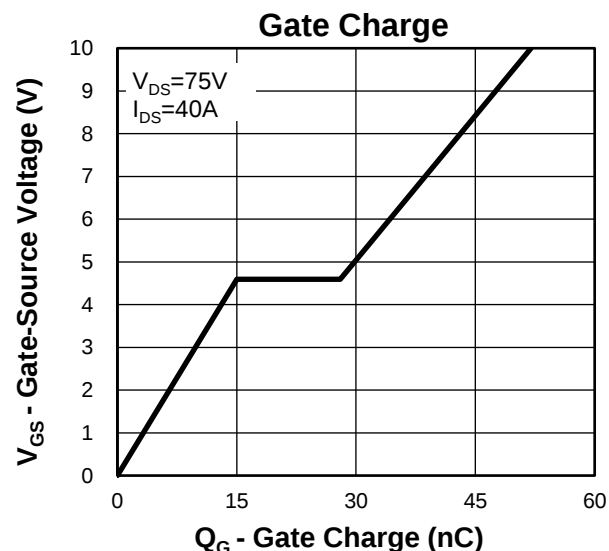
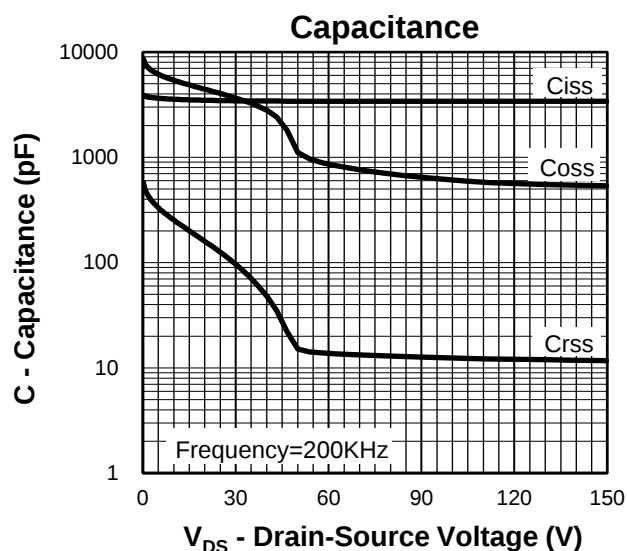
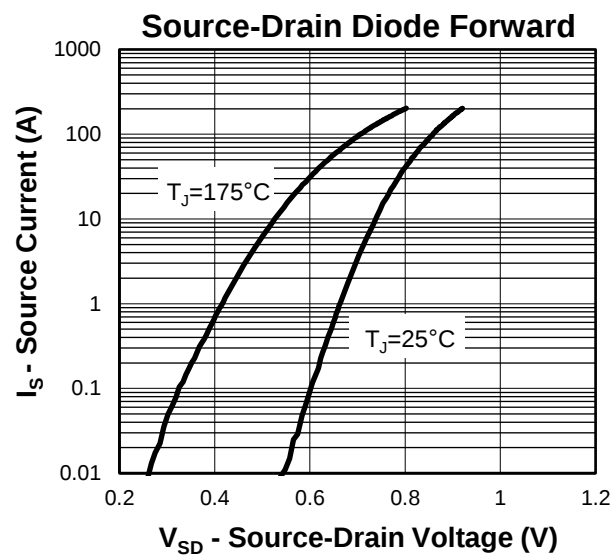
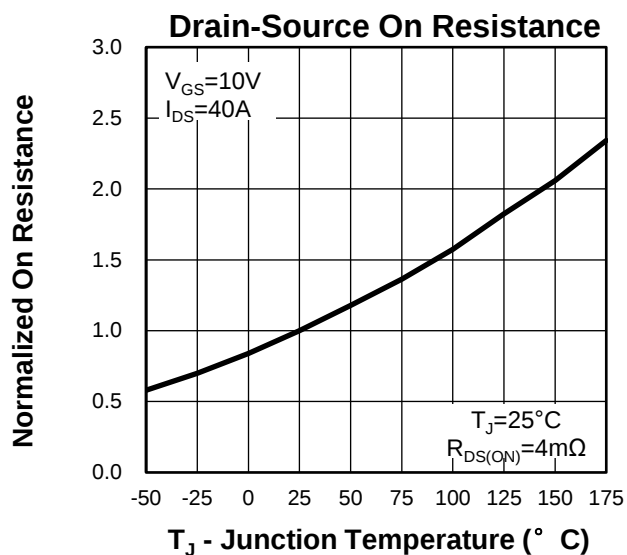
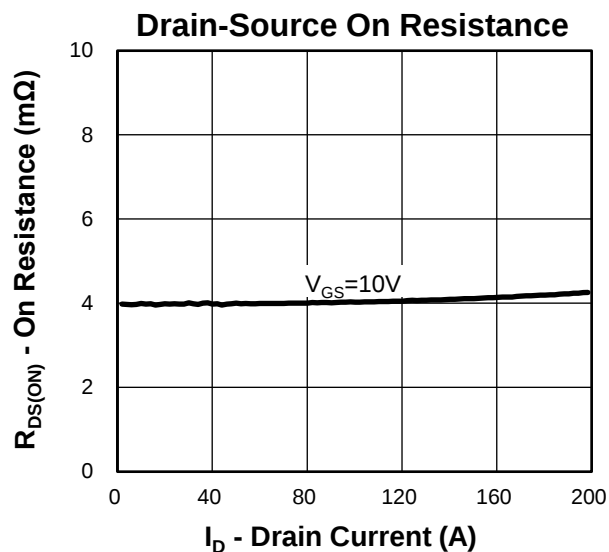
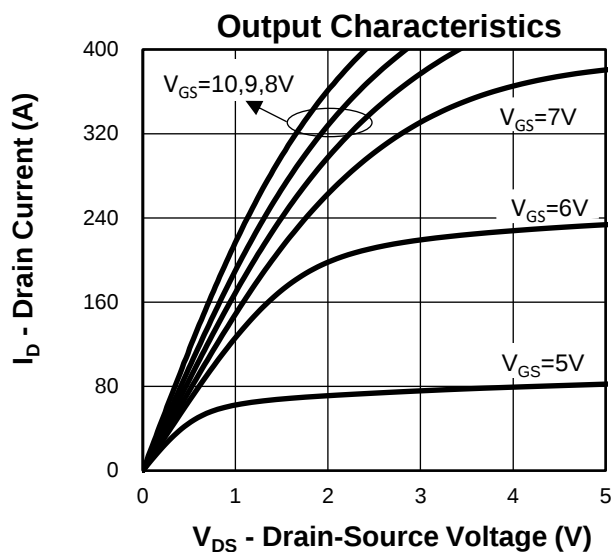


1st Line: Kwansemi LOGO
2nd Line: Kwansemi Code(KS)
3rd Line: Part Number(B2009T)
4th Line: Lot Number(YWWXXX)

Typical Characteristics

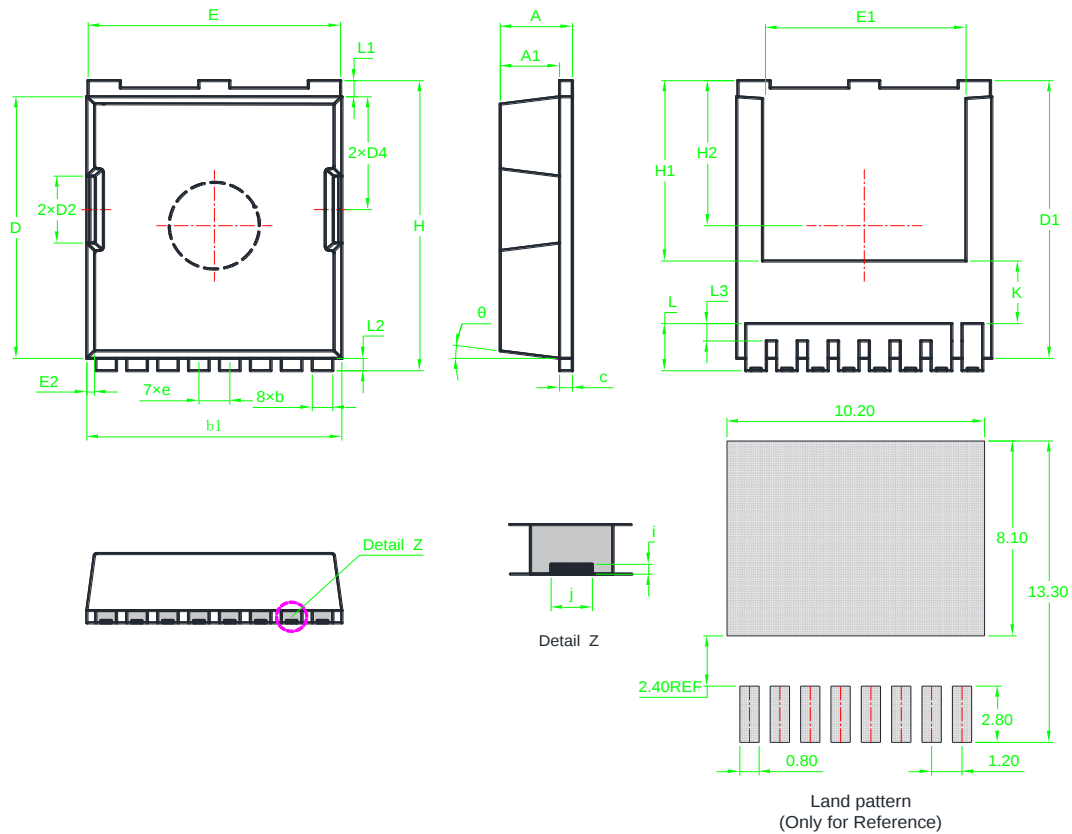


Typical Characteristics



Package Information

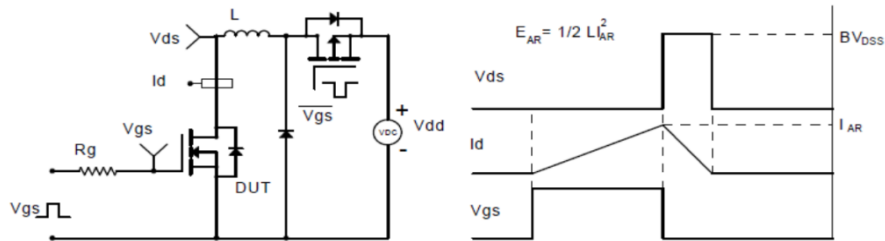
TOLL



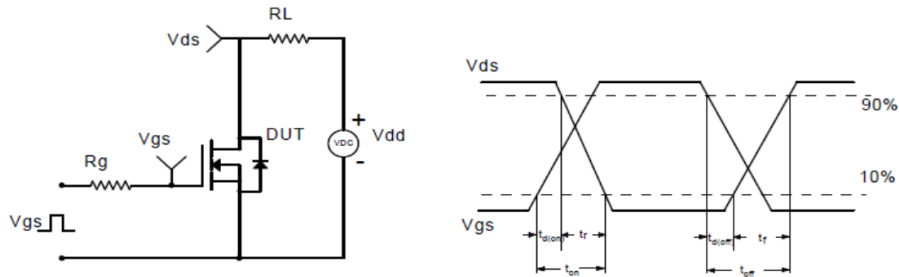
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.40	0.087	0.091	0.094	e	1.20BSC			0.047REF		
A1	1.70	1.80	1.90	0.067	0.071	0.075	H	11.58	11.68	11.78	0.455906	0.459843	0.46378
b	0.65	*	0.90	0.026	*	0.035	H1	6.95BSC			0.274BSC		
b1	9.80	9.90	10.00	0.386	0.390	0.394	H2	5.90BSC			0.232BSC		
c	0.40	0.50	0.60	0.016	0.020	0.024	i	0.10REF			0.004REF		
D	10.28	10.38	10.48	0.405	0.409	0.413	j	0.40REF			0.016REF		
D1	10.98	11.08	11.28	0.432	0.436	0.444	K	3.0REF			0.118REF		
D2	3.20	3.30	3.40	0.126	0.130	0.134	L	1.60	*	2.10	0.063	*	0.083
D4	4.45	4.55	4.65	0.175	0.179	0.183	L1	0.60	0.70	0.80	0.024	0.028	0.031
E	9.80	9.90	10.00	0.386	0.390	0.394	L2	0.50	0.60	0.70	0.020	0.024	0.028
E1	8.00	8.10	8.20	0.315	0.319	0.323	L3	0.40	*	0.80	0.016	*	0.031
E2	0.30	*	0.80	0.012	*	0.031	θ	10° REF			10° REF		

Note: Dimensions do not inclusive burrs and mold flash.

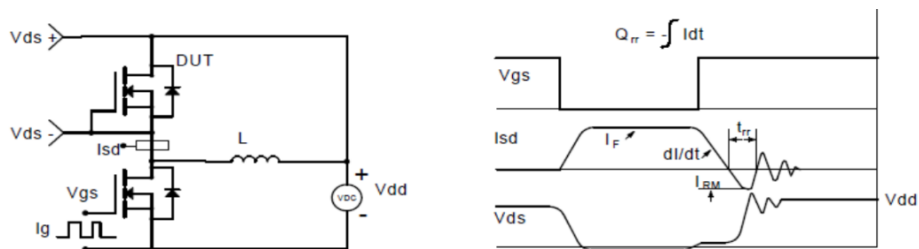
Avalanche Test Circuit and Waveforms



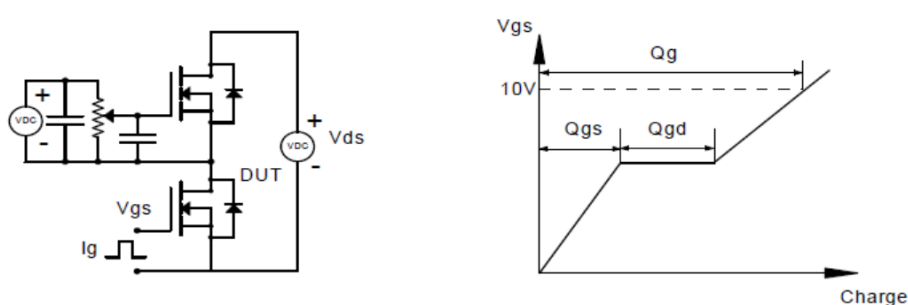
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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