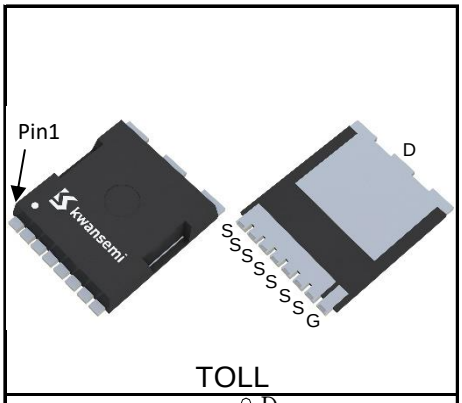
KS92010LAT

Single N-Channel Advanced Power MOSFET

Features

- 85V/400A,
  $R_{DS\ (ON)}$ =1.2mΩ(Typ.)@V_{GS}=10V
- Excellent Q_G x $R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested
- Good Thermal Performance

Pin Description



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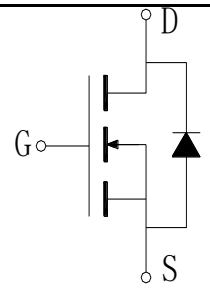


Single N-Channel MOSFET

Applications

- Motor Control
- Battery Power Management

RoHS Pb HF Halogen-Free

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		85	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	T_C=25°C	400	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	1600	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	400	A
		T_C=100°C	283	
P_D	Maximum Power Dissipation	T_C=25°C	500	W
		T_C=100°C	250	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.3	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		40	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		1056	mJ

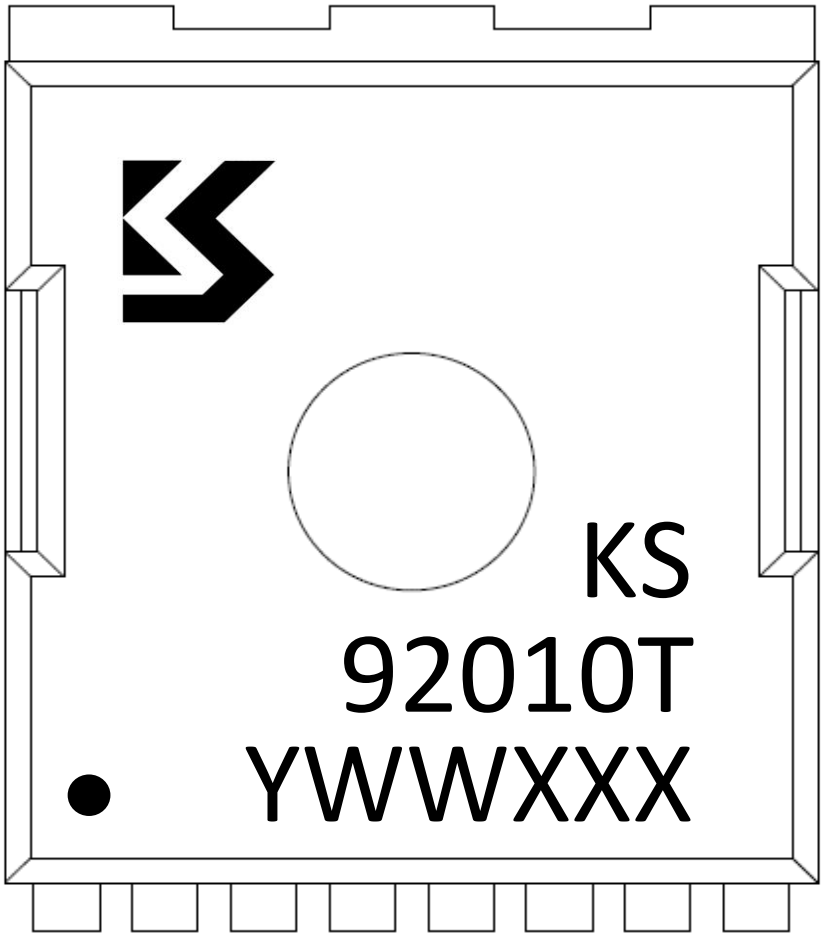
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS92010LAT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	85	92		V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, 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	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		1.2	1.7	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V		0.79	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs		62		ns
Q_{rr}	Reverse Recovery Charge			75		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.3		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Frequency=1.0MHz		6415		pF
C_{oss}	Output Capacitance			1450		
C_{rss}	Reverse Transfer Capacitance			75		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=40V, I_{DS}=40A, V_{GEN}=10V,R_G=3Ω		19		ns
t_r	Turn-on Rise Time			35		
$t_{d(OFF)}$	Turn-off Delay Time			48		
t_f	Turn-off Fall Time			21		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=40V, V_{GS}=10V, I_{DS}=40A		95		nC
Q_{gs}	Gate-Source Charge			22		
Q_{gd}	Gate-Drain Charge			18		

Notes:
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.
④Limited by T_{Jmax}, I_{AS} =65A, L=0.5mH, V_{DD} = 48V, R_G = 25Ω , Starting TJ = 25°C.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

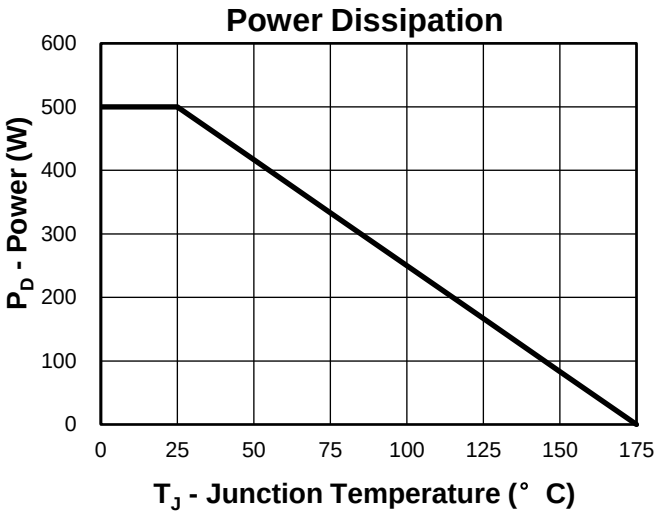
Ordering and Marking Information

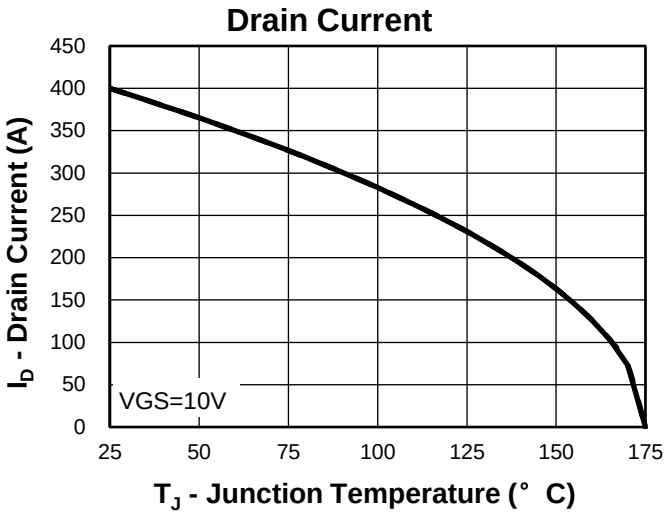
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS92010LAT	TOLL	Tape&Reel	2000	13''	24mm

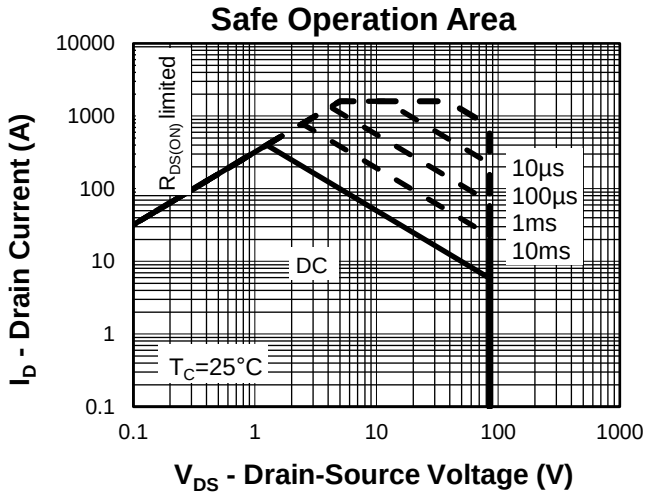


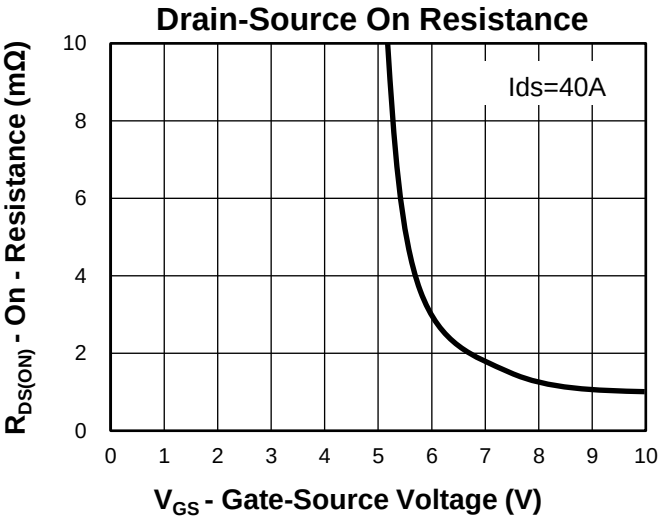
1st Line: Kwansemi LOGO
2nd Line: Kwansemi Code(KS)
3rd Line: Part Number(92010T)
4th Line: Lot Number(YWWXXX)

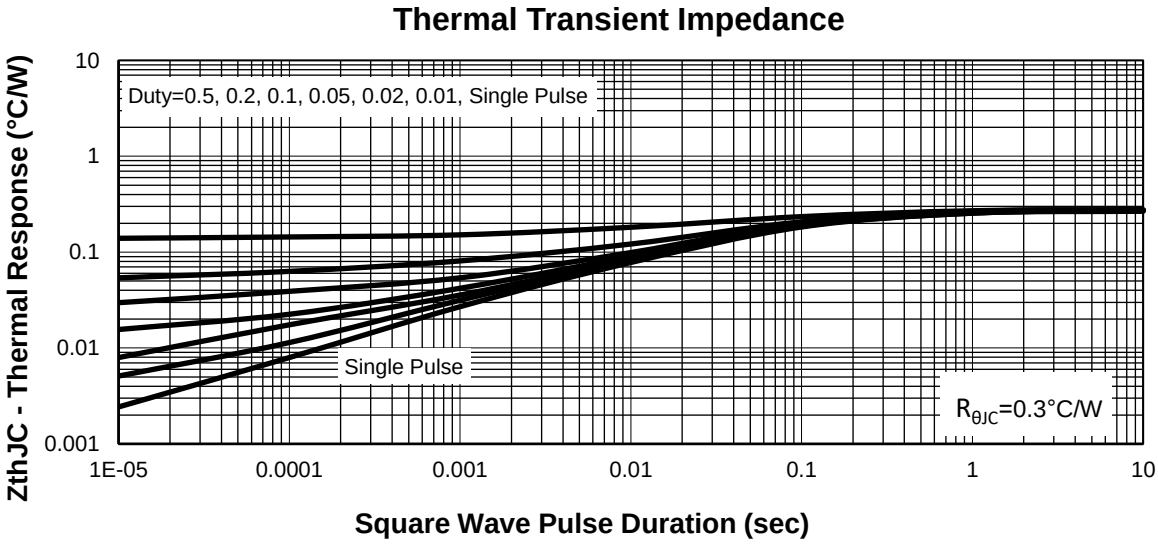
Typical Characteristics



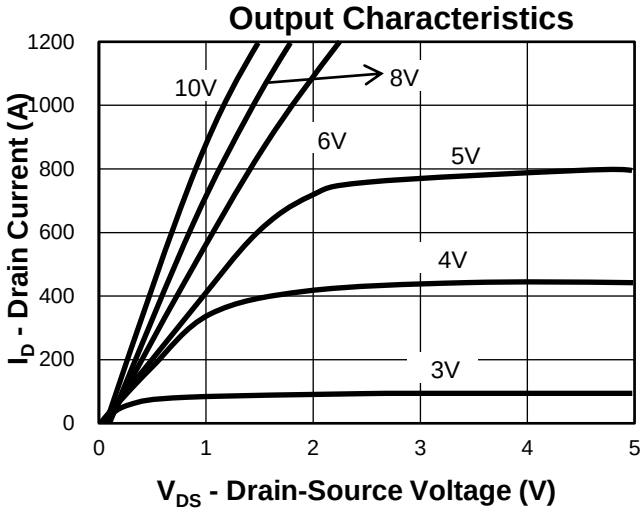


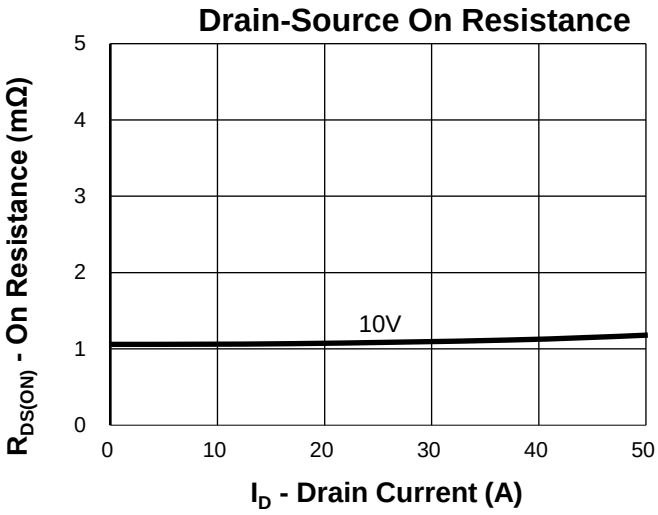


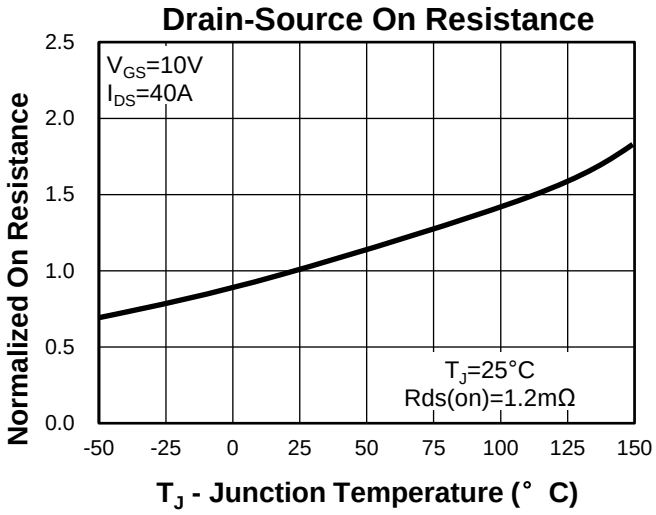


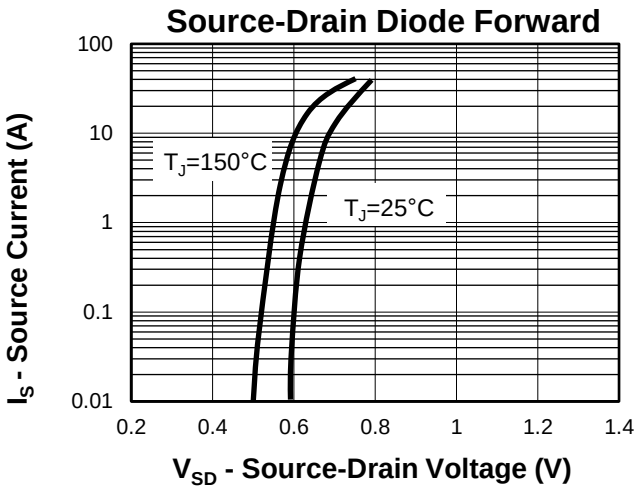


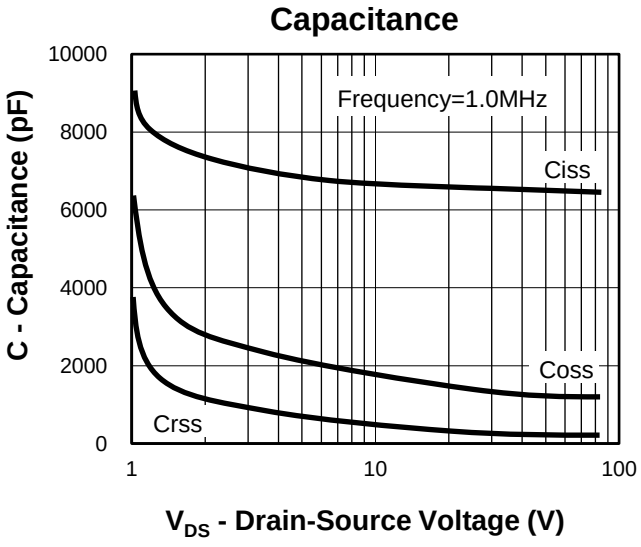
Typical Characteristics

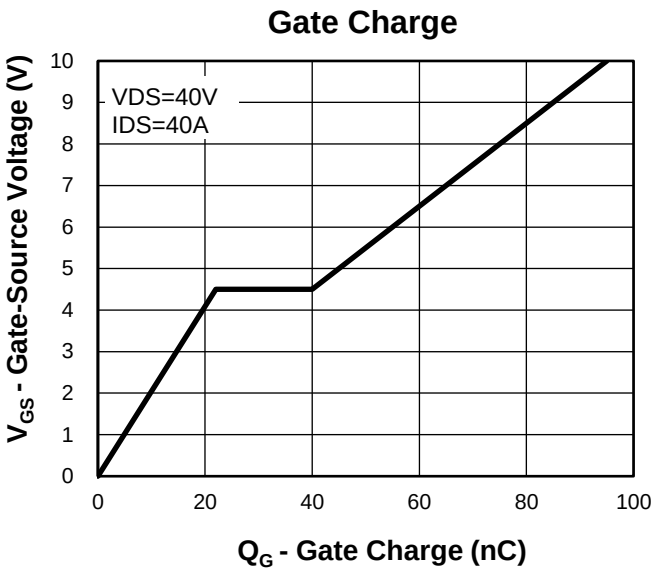












Package Information

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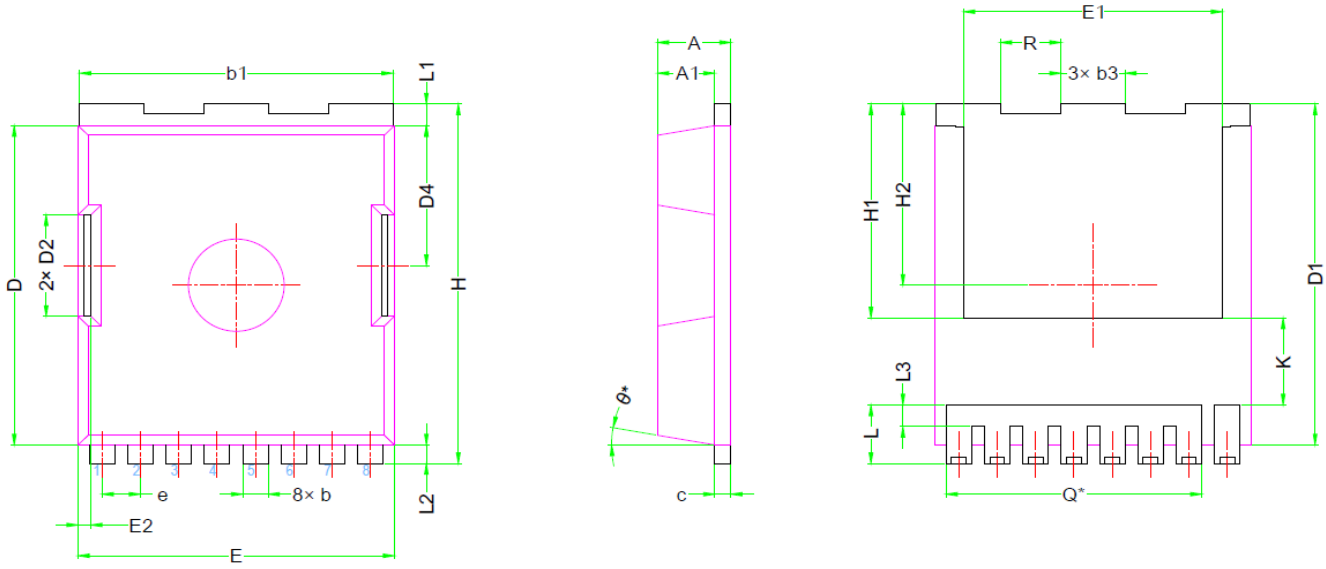
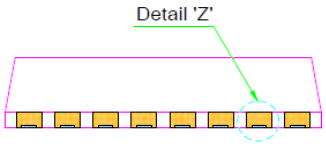
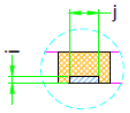
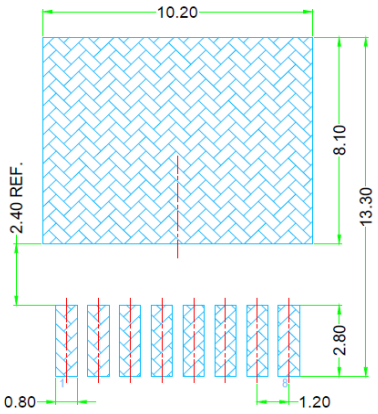






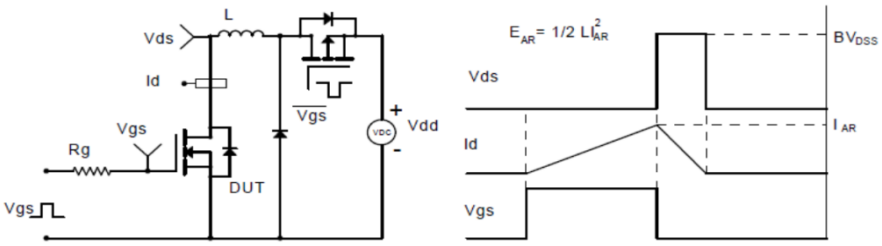
Detail 'Z'



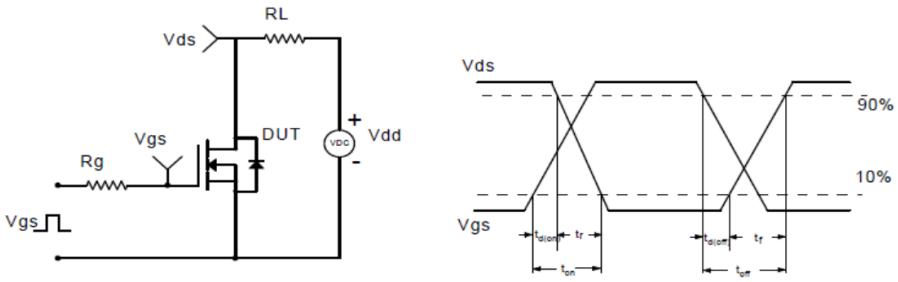
Land Pattern
(Only For Reference)

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	H	11.58	11.68	11.80	0.456	0.460	0.465
A1	1.70	1.80	1.90	0.067	0.071	0.075	H1	6.95BSC			0.274BSC		
b	0.65	0.80	0.90	0.026	0.031	0.035	H2	5.89BSC			0.232BSC		
b1	9.70	9.80	9.90	0.382	0.386	0.390	i	0.10REF			0.004REF		
b3	1.15	*	2.10	0.05	*	0.08	j	0.46REF			0.018REF		
c	0.40	0.50	0.60	0.016	0.020	0.024	K	3.10REF			0.122REF		
D	10.28	10.38	10.48	0.405	0.409	0.413	L	1.55	*	2.10	0.061	*	0.083
D1	10.98	11.08	11.20	0.432	0.436	0.441	L1	0.60	0.70	0.80	0.024	0.028	0.031
D2	3.20	3.30	3.40	0.126	0.130	0.134	L2	0.50	0.60	0.70	0.020	0.024	0.028
D4	4.45	4.55	4.65	0.175	0.179	0.183	L3	0.40	*	0.80	0.016	*	0.031
E	9.80	9.90	10.00	0.386	0.390	0.394	Q	6.80REF			0.268REF		
E1	8.00	8.10	8.20	0.315	0.319	0.323	R	1.80	*	3.15	0.07	*	0.12
E2	0.30	*	0.80	0.012	*	0.031	θ	10°REF			10°REF		
e	1.20BSC			0.047BSC									

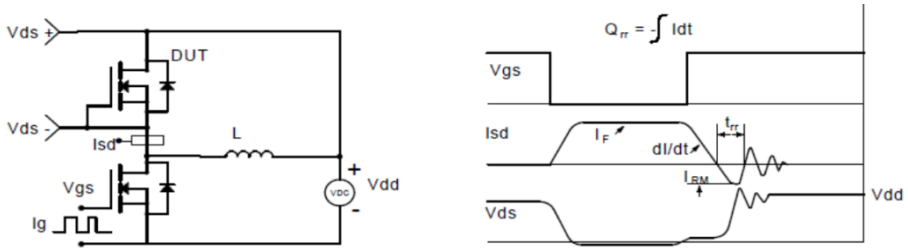
Avalanche Test Circuit and Waveforms



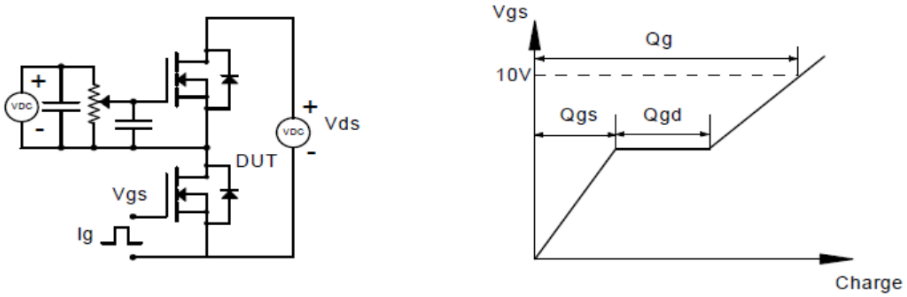
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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