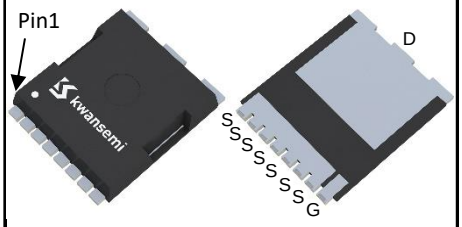
KS62024LAT2

Single N-Channel Advanced Power MOSFET

Features

- 60V/275A,
  $R_{DS\ (ON)}$ =1.3mΩ(Typ.)@V_{GS}=10V
  $R_{DS\ (ON)}$ =2mΩ(Typ.)@V_{GS}=4.5V
- Excellent Q_G x $R_{DS(on)}$ product(FOM)
- SGT Gen2 Technology
- 100% Avalanche Tested
- Good Thermal Performance

Pin Description



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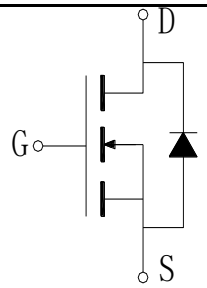


Single N-Channel MOSFET

Applications

- Motor Control
- Battery Power Management
- High Frequency Switching and Synchronous Rectification

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		60	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	275	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	1100	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	275	A
		T_C=100°C	194	
P_D	Maximum Power Dissipation	T_C=25°C	217	W
		T_C=100°C	109	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.69	°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		462	mJ

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

Symbol	Parameter	Test Condition	KS62024LAT2			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.2	1.9	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}=20A		1.3	1.7	mΩ
		V_{GS}=4.5V, I_{DS}=16A		2	2.8	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V		0.81	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs		45		ns
Q_{rr}	Reverse Recovery Charge			81		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.2		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, Frequency=1.0MHz		5460		pF
C_{oss}	Output Capacitance			1835		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V, I_{DS}=40A, V_{GEN}=10V,R_G=3Ω		13		ns
t_r	Turn-on Rise Time			42		
$t_{d(OFF)}$	Turn-off Delay Time			68		
t_f	Turn-off Fall Time			30		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=40A		102		nC
Q_{gs}	Gate-Source Charge			16		
Q_{gd}	Gate-Drain Charge			28		

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.

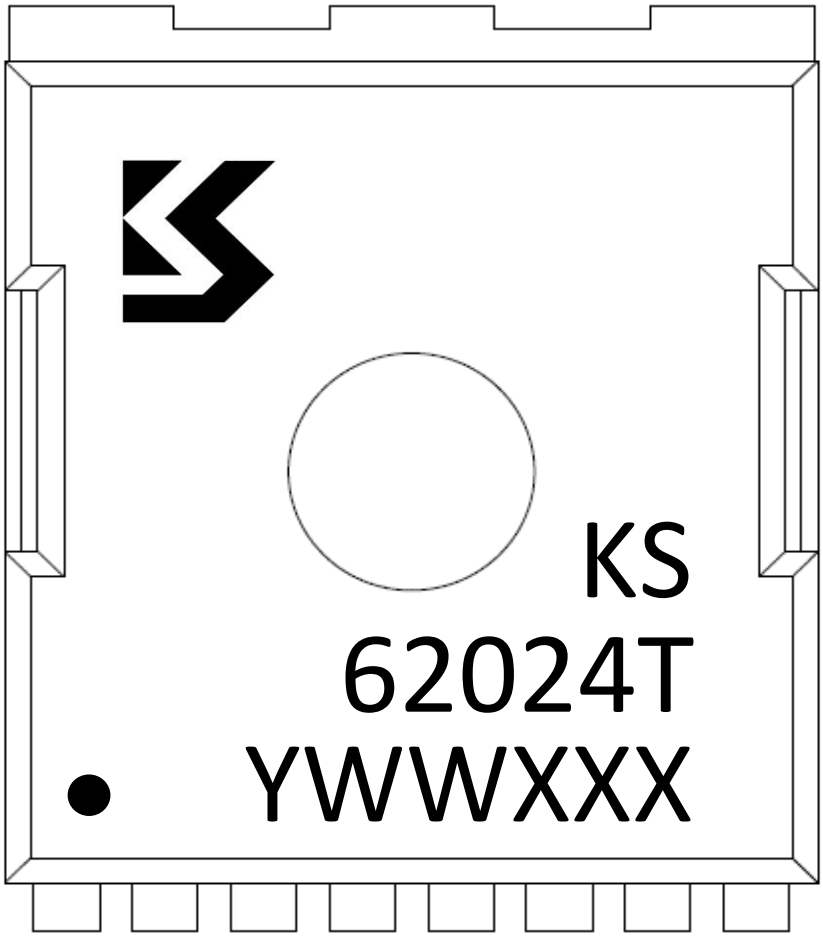
④Limited by T_{Jmax}, I_{AS} =43A, L=0.5mH, V_{DD} = 30V, R_G = 25Ω , Starting TJ = 25°C,100% tested and guaranteed.

⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.

⑥Guaranteed by design, not subject to production testing.

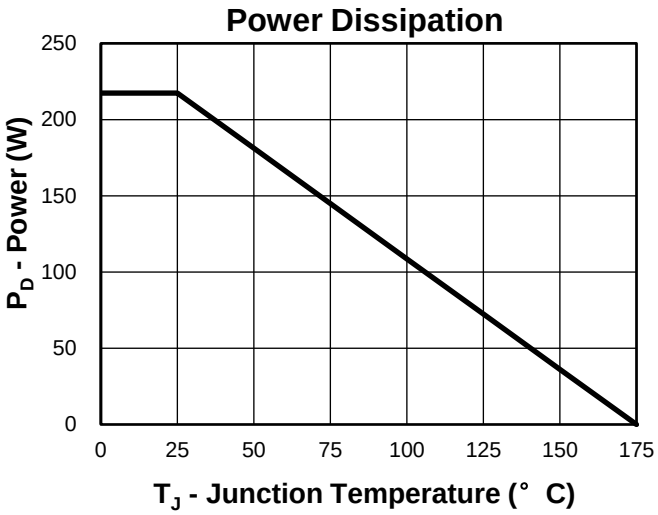
Ordering and Marking Information

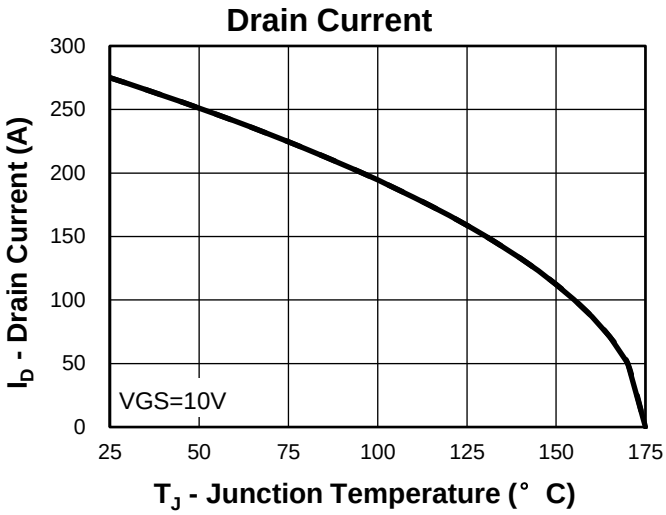
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS62024LAT2	TOLL	Tape&Reel	2000	13''	24mm

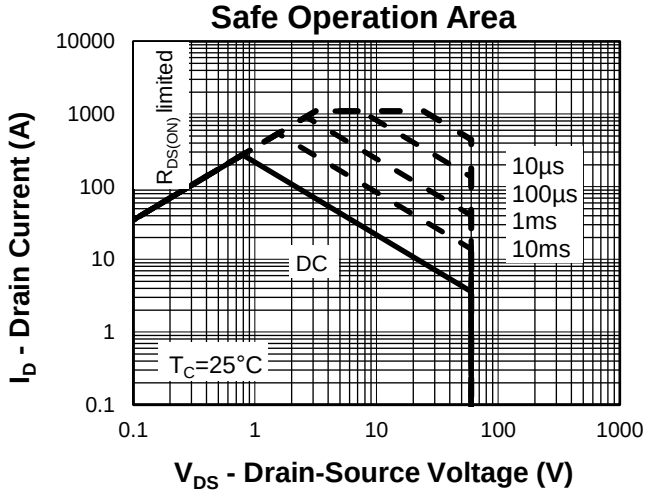


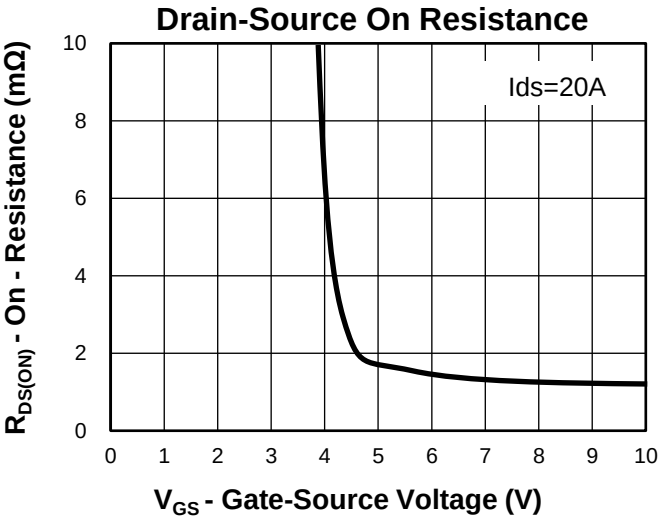
1st Line: Kwansemi LOGO
2nd Line: Kwansemi Code(KS)
3rd Line: Part Number(62024T)
4th Line: Lot Number(YWWXXX)

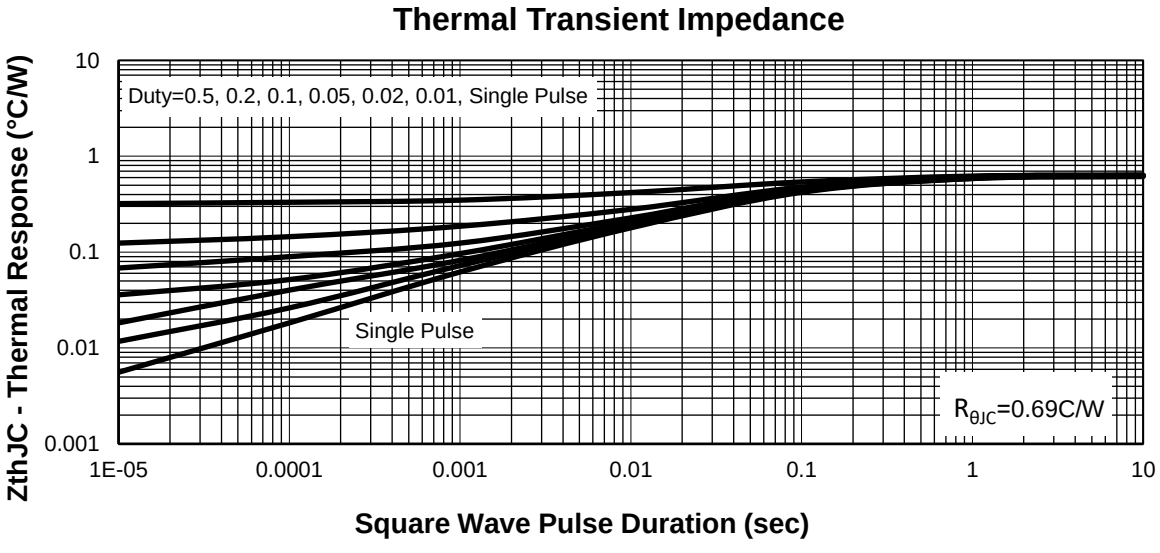
Typical Characteristics











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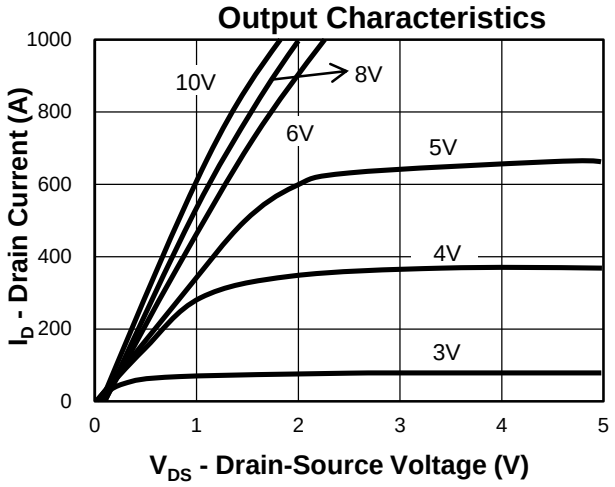

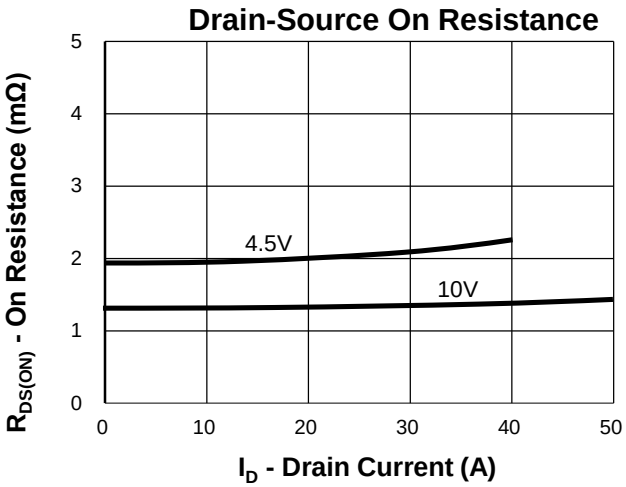

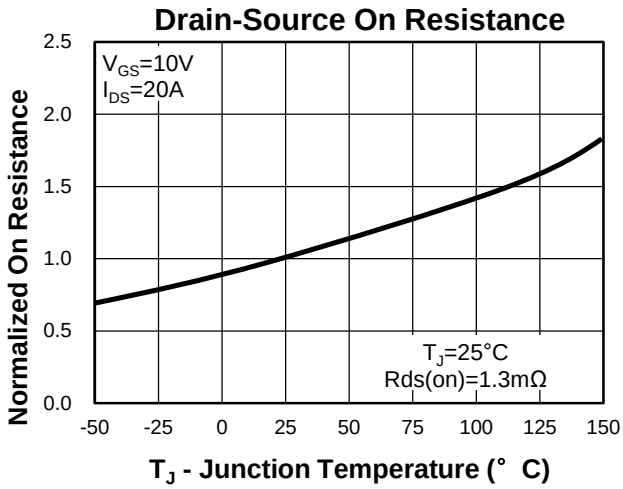

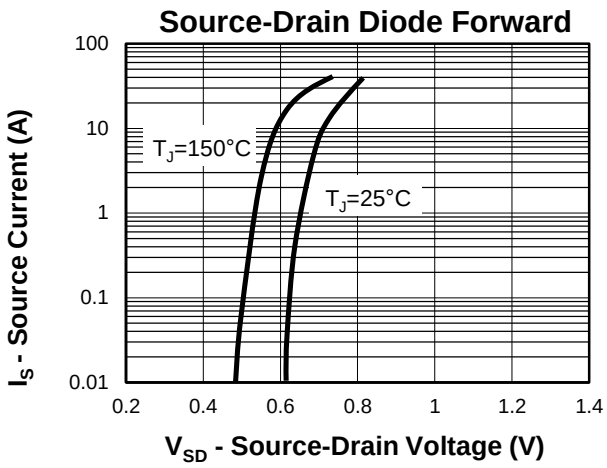

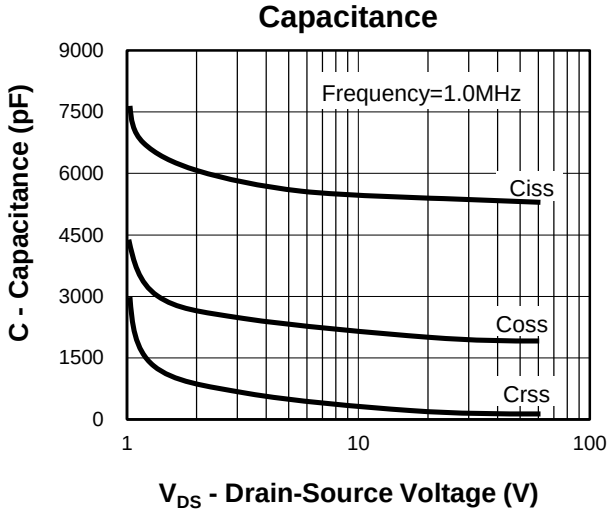

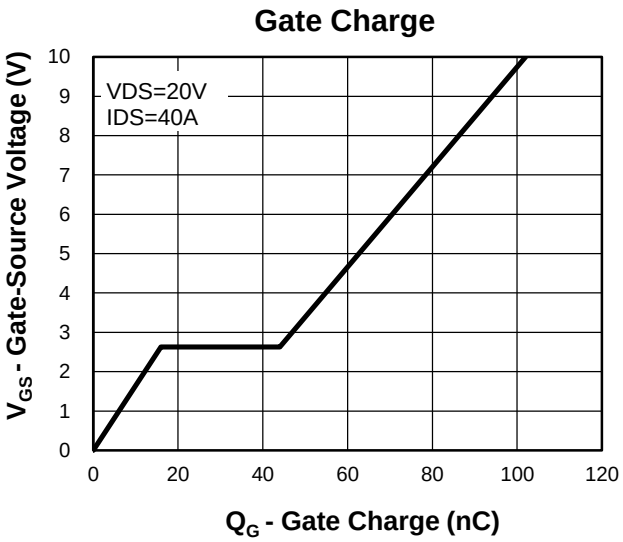

Package Information

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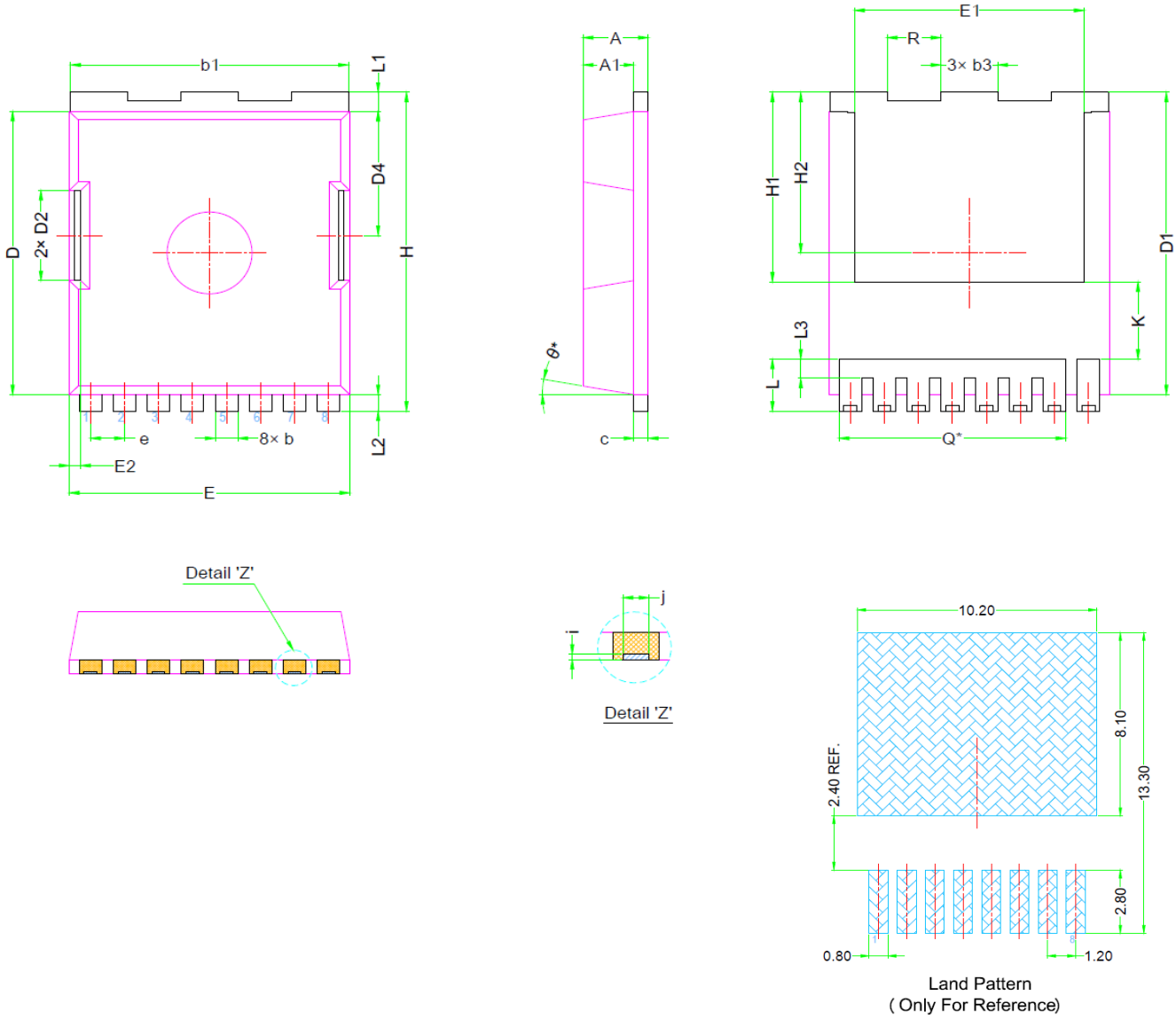
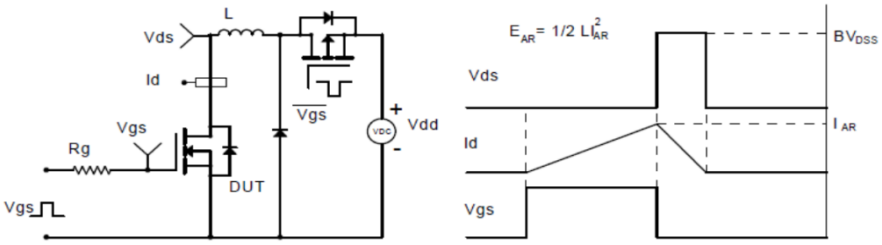


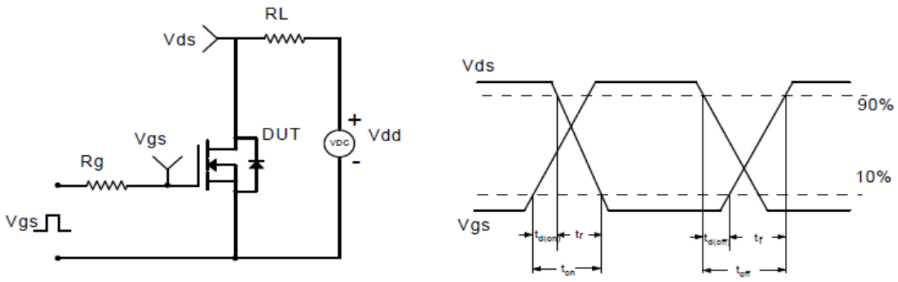
Land Pattern
(Only For Reference)

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									

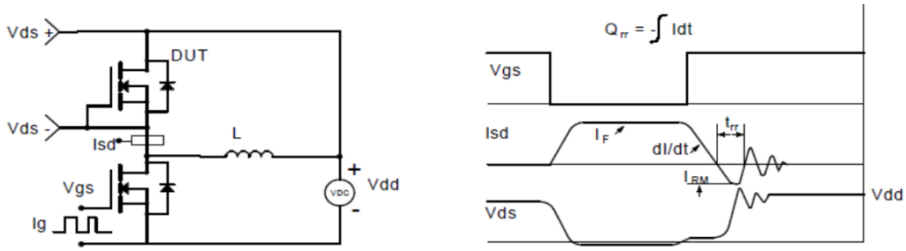
Avalanche Test Circuit and Waveforms



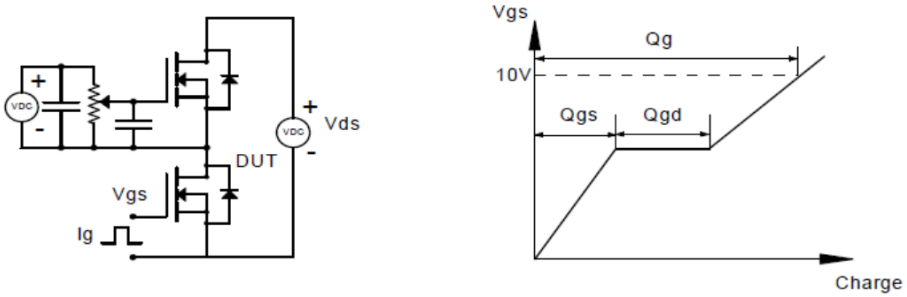
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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