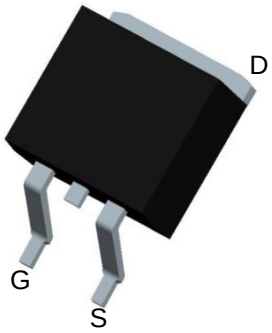
KS12030GAT

Single N-Channel Advanced Power MOSFET

Features

- 100V/125A,
  $R_{DS\ (ON)}$ =4.5mΩ(Typ.)@V_{GS}=10V
  $R_{DS\ (ON)}$ =5.5mΩ(Typ.)@V_{GS}=4.5V
- Excellent Q_G x $R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested

Pin Description



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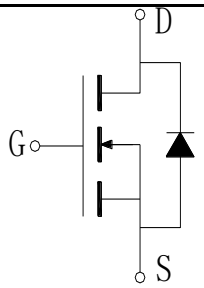


Single N-Channel MOSFET

Applications

- 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		100	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	125	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	500	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	125	A
		T_C=100°C	88	
P_D	Maximum Power Dissipation	T_C=25°C	158	W
		T_C=100°C	79	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.95	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		256	mJ

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

Symbol	Parameter	Test Condition	KS12030GAT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, 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	1.8	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		4.5	6	mΩ
		V_{GS}=4.5V, I_{DS}=16A		5.5	9	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V		0.84	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs		27		ns
Q_{rr}	Reverse Recovery Charge			38		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}=50V, Frequency=1.0MHz		3015		pF
C_{oss}	Output Capacitance			1250		
C_{rss}	Reverse Transfer Capacitance			45		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=50V, I_{DS}=20A, V_{GEN}=10V,R_G=3Ω		11		ns
t_r	Turn-on Rise Time			19		
$t_{d(OFF)}$	Turn-off Delay Time			33		
t_f	Turn-off Fall Time			15		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=10V, I_{DS}=20A		39		nC
Q_{gs}	Gate-Source Charge			6		
Q_{gd}	Gate-Drain Charge			9		

Notes:

①Pulse width limited by safe operating area.

②Calculated continuous current based on maximum allowable junction temperature.The package limitation current is 75A.

③When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.

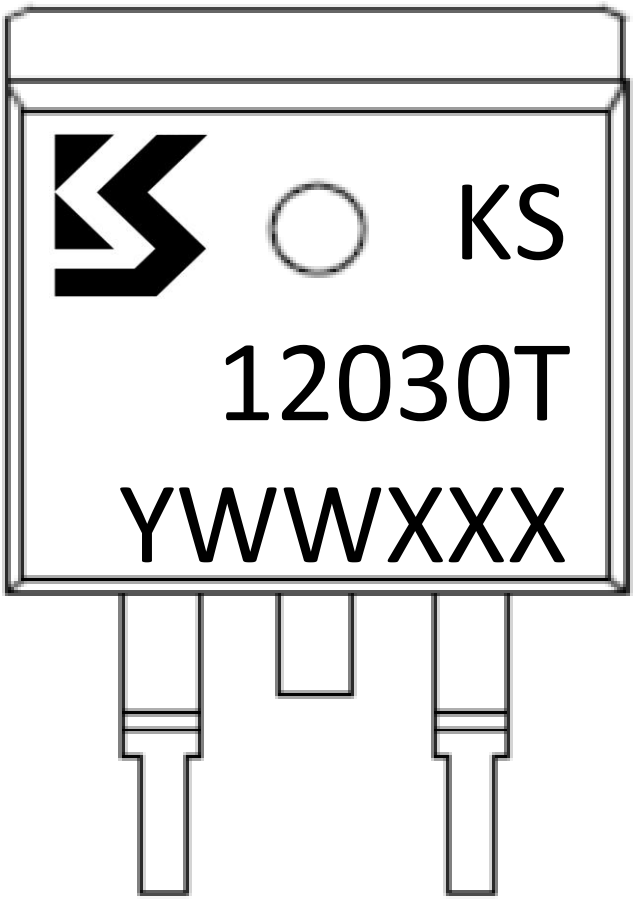
④Limited by T_{Jmax}, I_{AS} =32A, L=0.5mH, V_{DD} = 48V, R_G = 25Ω , Starting TJ = 25°C.

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

⑥Guaranteed by design, not subject to production testing.

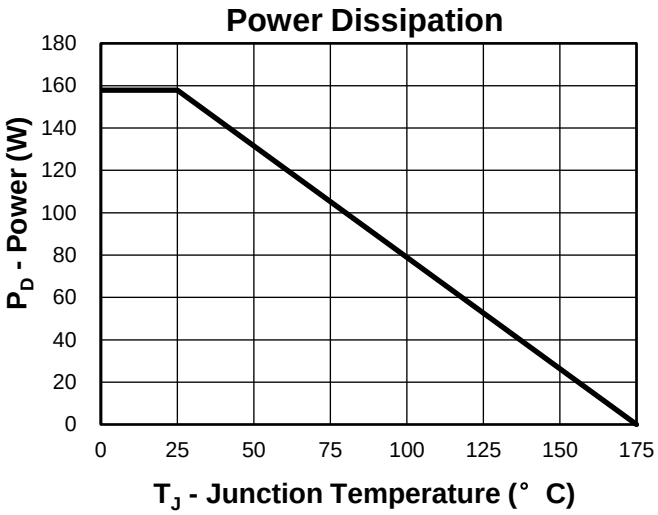
Ordering and Marking Information

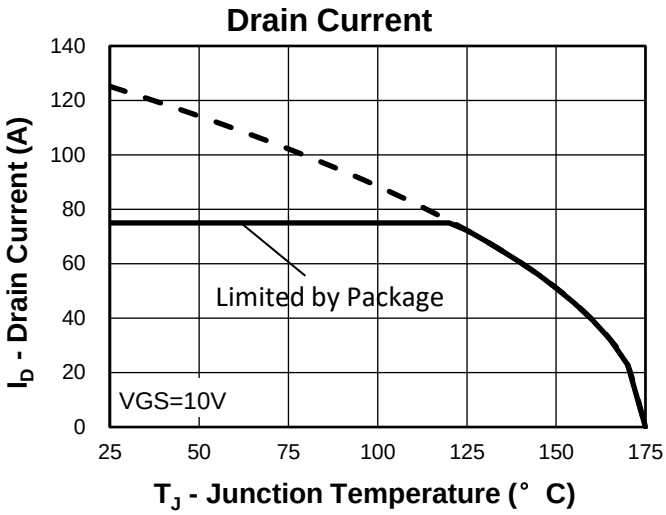
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS12030GAT	TO-263	Tape&Reel	800	13''	24mm

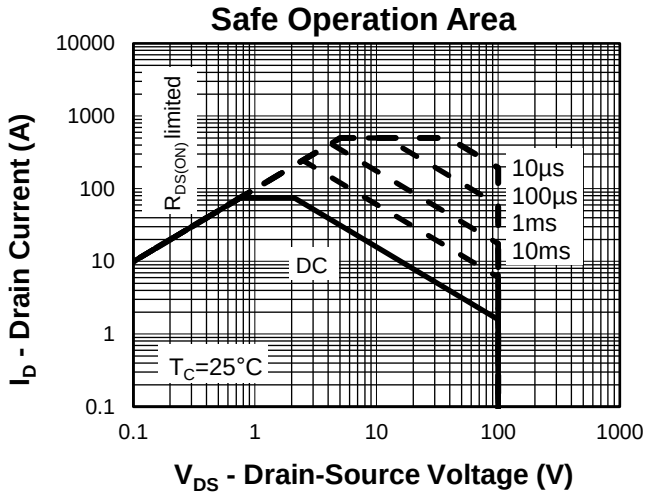


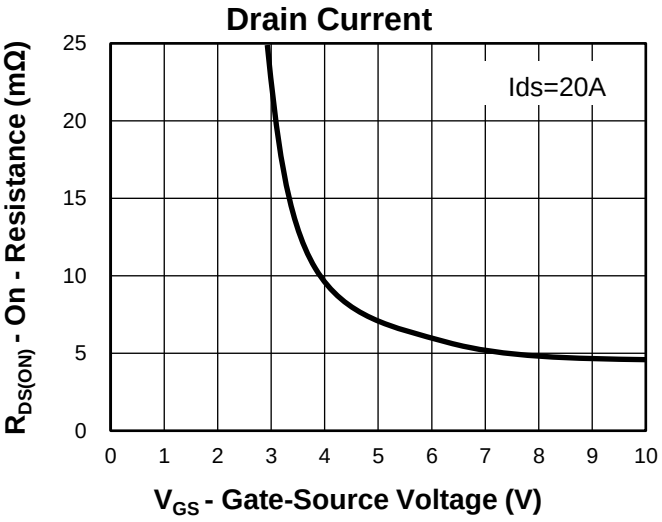
1st Line: Kwansemi LOGO， Kwansemi Code(KS)
2nd Line: Part Number(12030T)
3rd Line: Lot Number(YWWXXX)

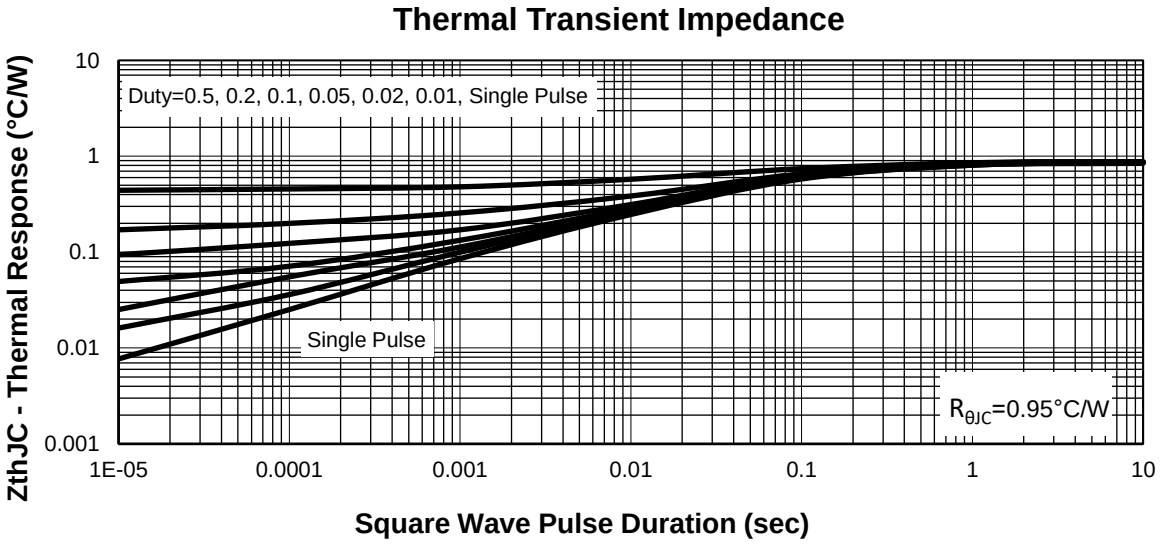
Typical Characteristics











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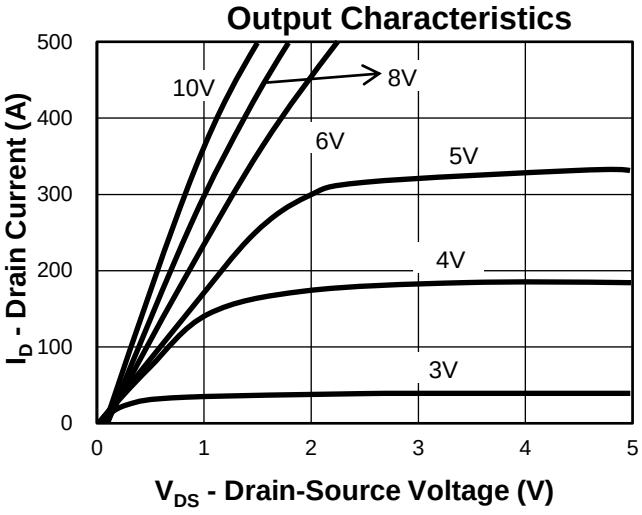

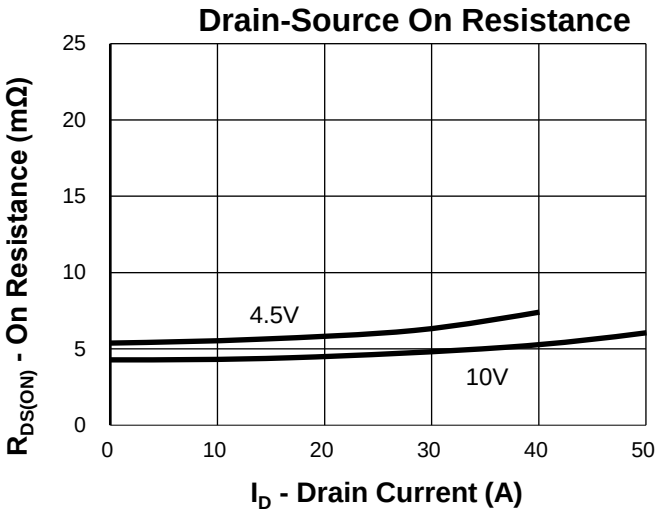

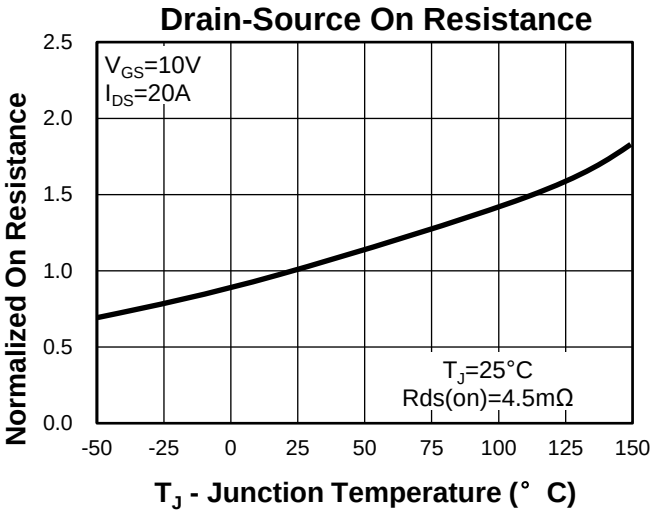

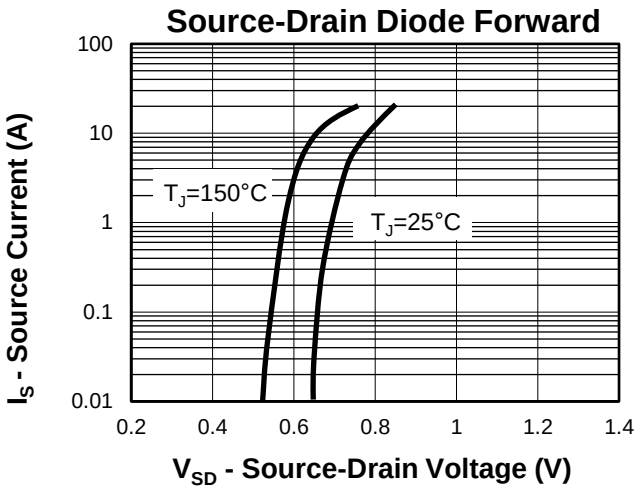

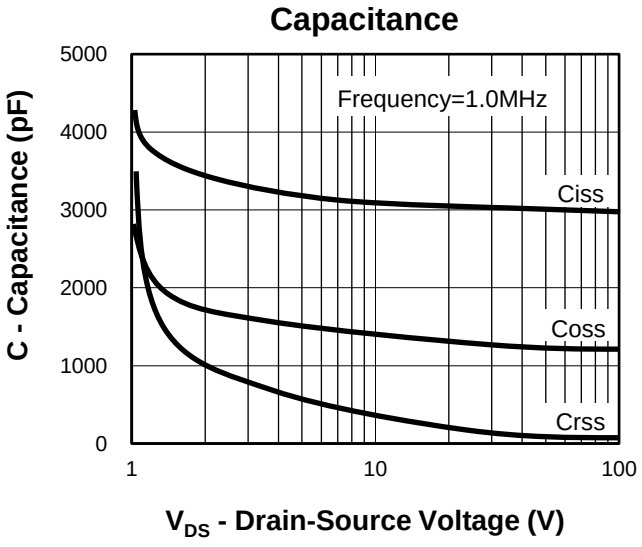

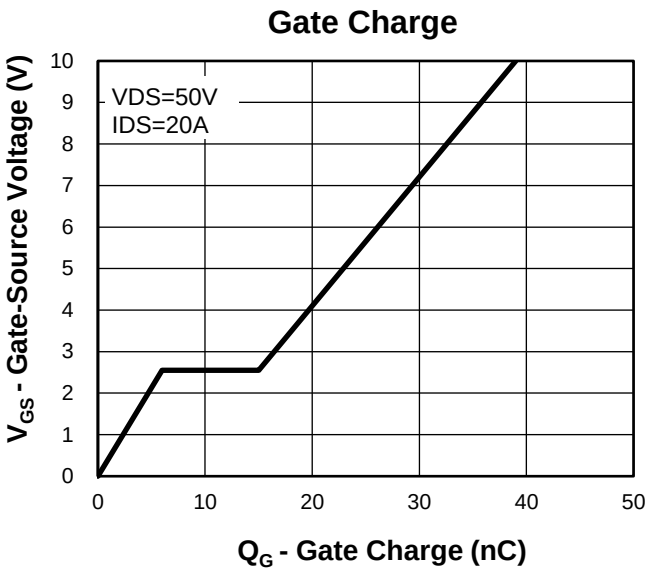

Package Information

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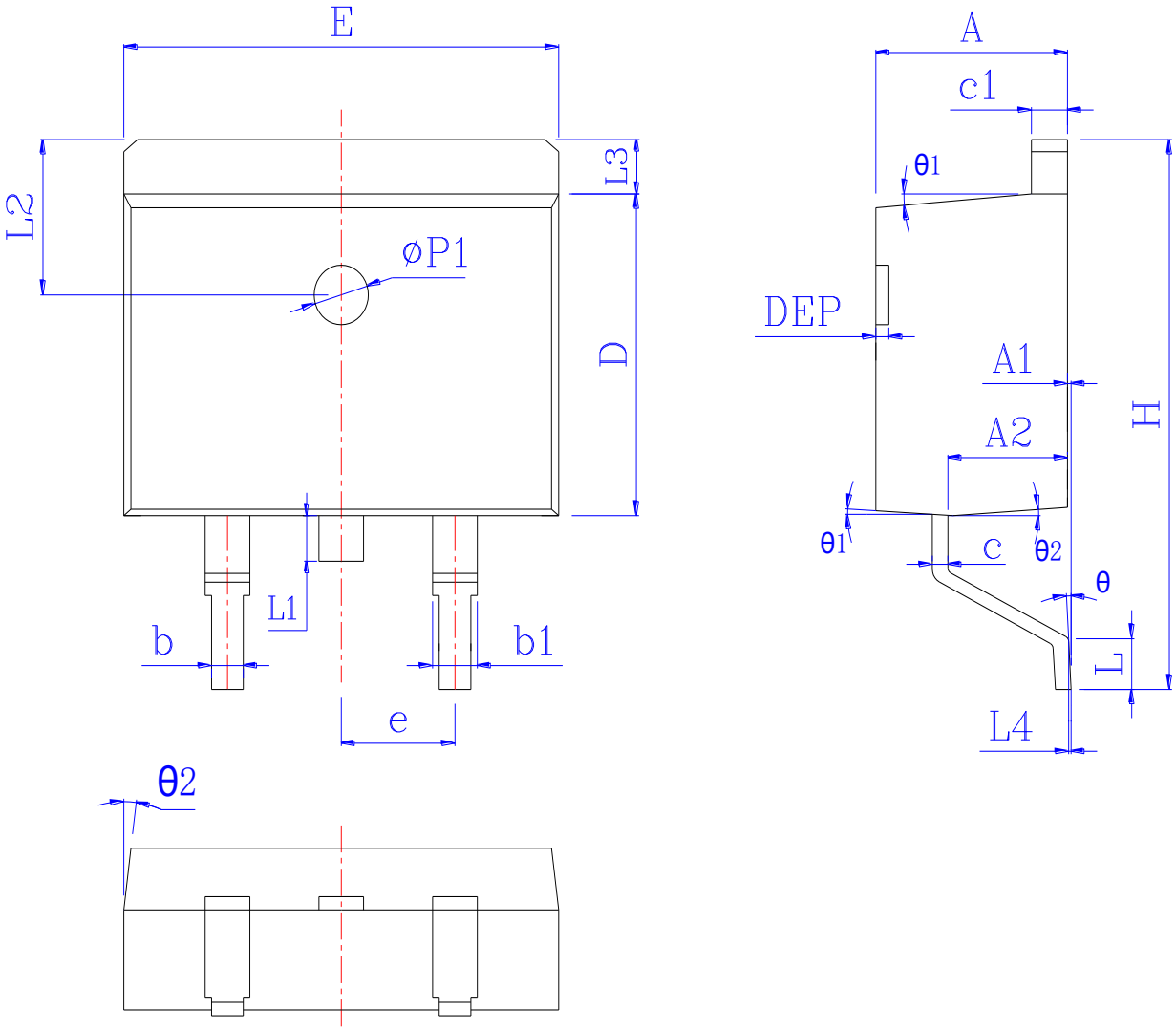
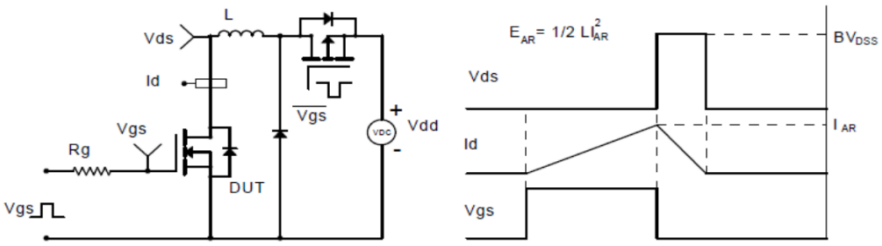
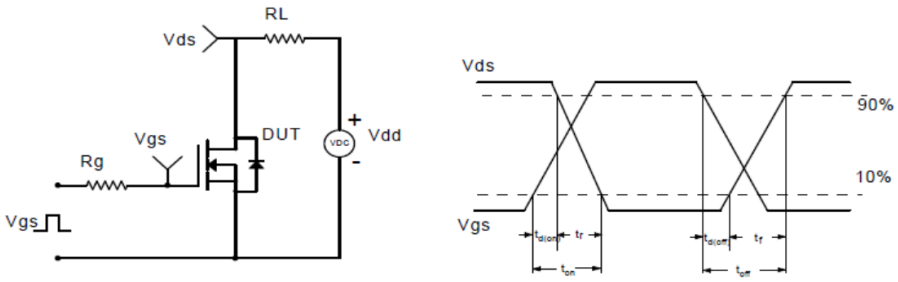


SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.55	4.72	0.173	0.179	0.186	L	1.94	2.30	2.60	0.076	0.091	0.102
A1	0.00	0.10	0.25	0.000	0.005	0.010	L3	1.17	1.29	1.40	0.046	0.051	0.055
A2	2.59	2.69	2.79	0.102	0.106	0.110	L1	*	*	1.70	*	*	0.067
b	0.76	*	0.90	0.030	*	0.035	L4	0.25 BSC			0.01 BSC		
b1	1.22	*	1.36	0.048	*	0.054	L2	2.50 REF			0.098 REF		
c	0.33	*	0.47	0.013	*	0.019	θ	0°	*	8°	0°	*	8°
c1	1.22	*	1.32	0.048	*	0.052	θ1	5°	7°	9°	5°	7°	9°
D	8.60	*	9.29	0.339	*	0.366	θ2	1°	3°	5°	1°	3°	5°
E	9.95	*	10.26	0.392	*	0.404	DEP	0.05	0.10	0.20	0.002	0.004	0.008
e	2.54BSC			0.100BSC			Φp1	1.40	1.50	1.60	0.055	0.059	0.063
H	14.70	15.10	15.79	0.579	0.594	0.622							

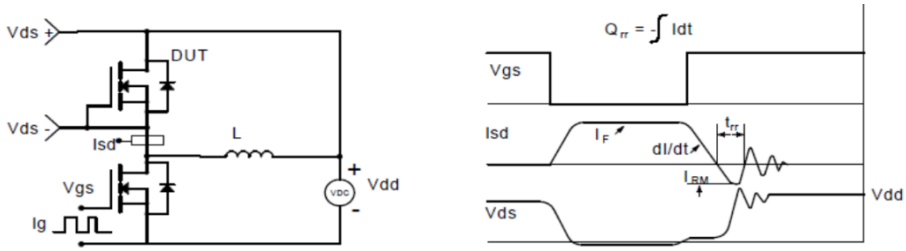
Avalanche Test Circuit and Waveforms



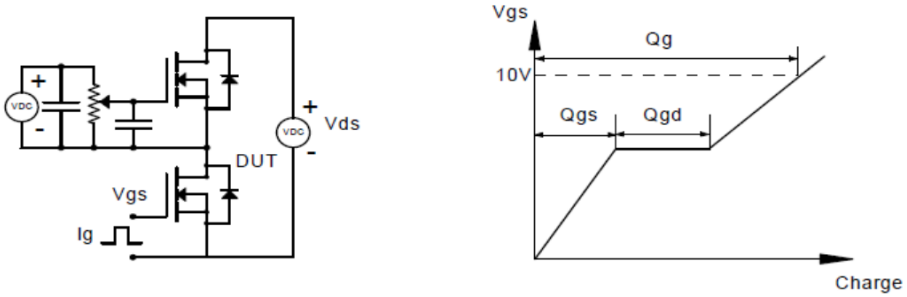
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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