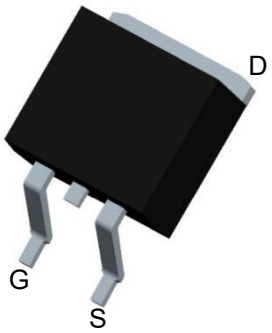
KS1202GA

Single N-Channel Advanced Power MOSFET

Features

- 100V/120A,
  $R_{DS\ (ON)}$ =7mΩ(Typ.)@V_{GS}=10V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- 100% Avalanche Tested

Pin Description



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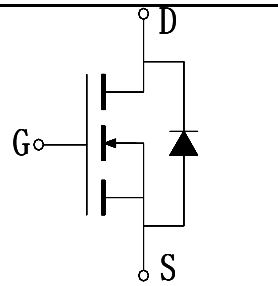


Single N-Channel MOSFET

Applications

- DC-DC Converters and Off-line UPS
- Power Management in Inverter System

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		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	120	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	480	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	120	A
		T_C=100°C	76	
P_D	Maximum Power Dissipation	T_C=25°C	192	W
		T_C=100°C	76	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.65	°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		992	mJ

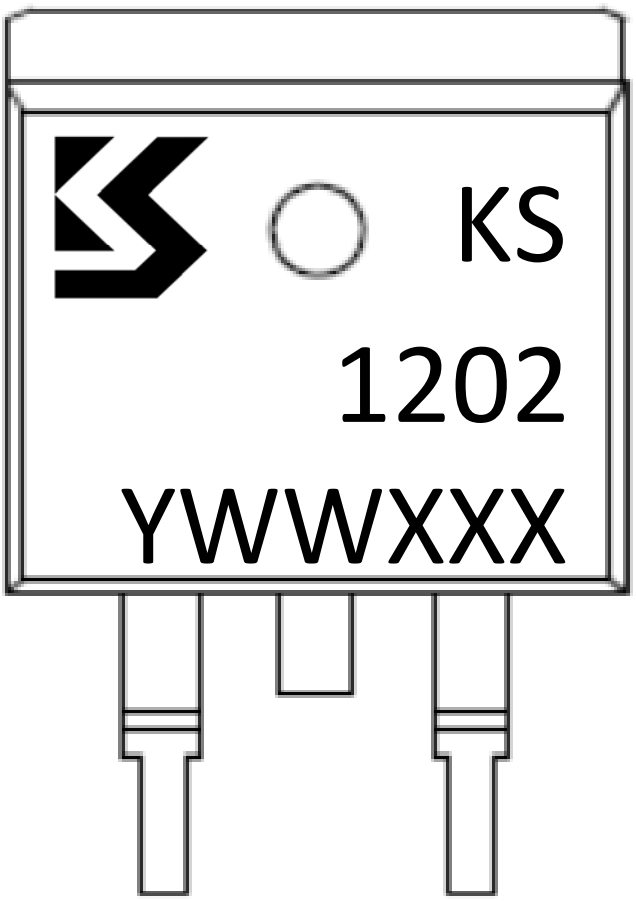
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS1202GA			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	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		7	8	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=40A, V_{GS}=0V		0.84	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=40A, dI_{SD}/dt=100A/μs		53		ns
Q_{rr}	Reverse Recovery Charge			136		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		2.6		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=50V, Frequency=1.0MHz		6825		pF
C_{oss}	Output Capacitance			500		
C_{rss}	Reverse Transfer Capacitance			345		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=50V, I_{DS}=1A, V_{GEN}=10V,R_G=6Ω		33		ns
t_r	Turn-on Rise Time			59		
$t_{d(OFF)}$	Turn-off Delay Time			86		
t_f	Turn-off Fall Time			29		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=80V, V_{GS}=10V, I_{DS}=40A		146		nC
Q_{gs}	Gate-Source Charge			30		
Q_{gd}	Gate-Drain Charge			60		

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} =63A, 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.

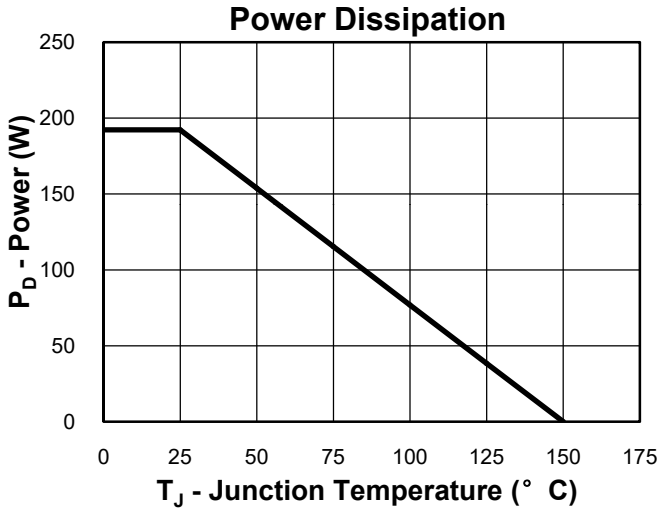
Ordering and Marking Information

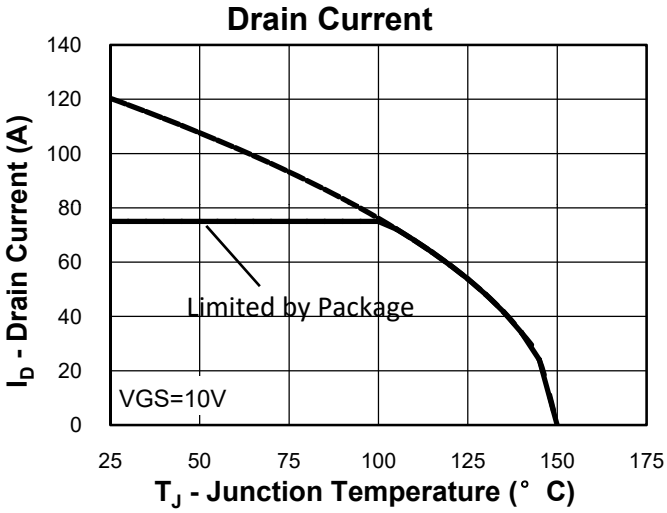
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS1202GA	TO-263	Tape&Reel	800	13”	24mm

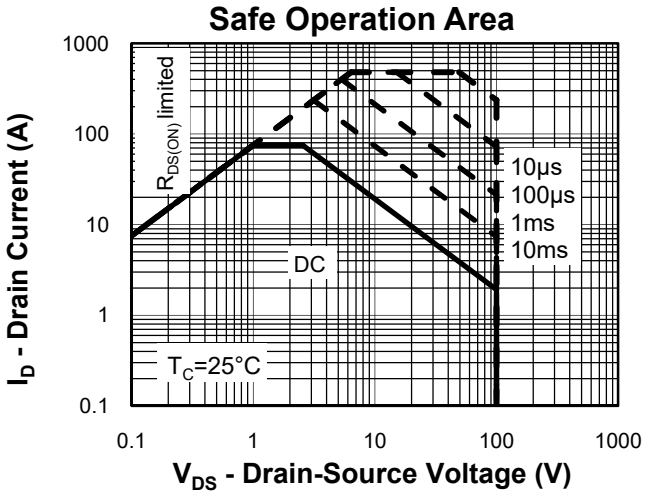


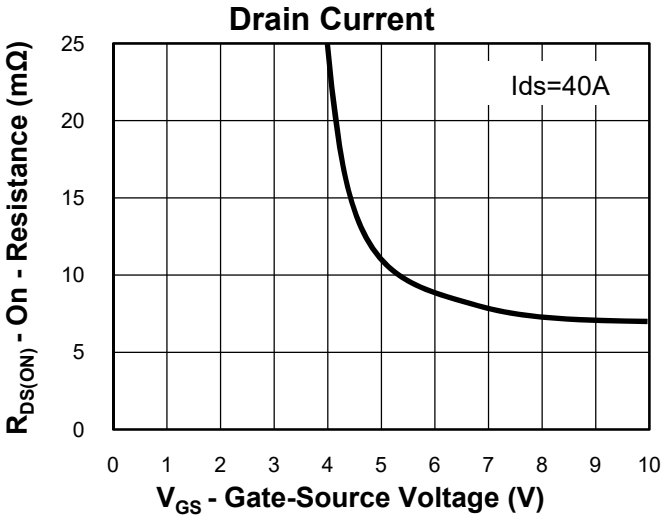
Y =Year,2017-A,2018-B,etc.
WW =Week.
XXX =Lot number.

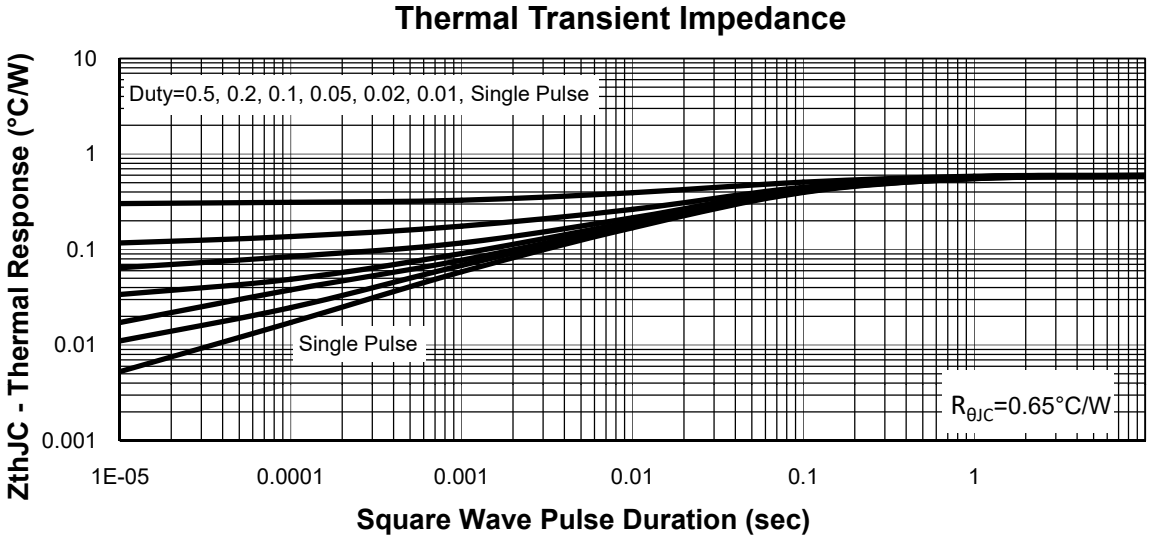
Typical Characteristics











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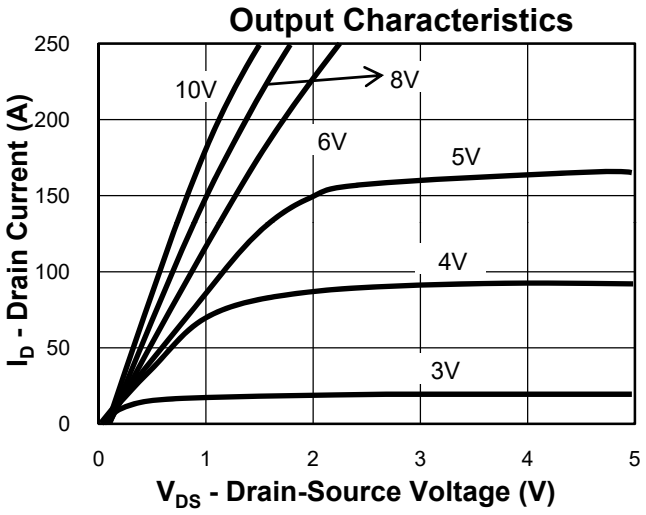

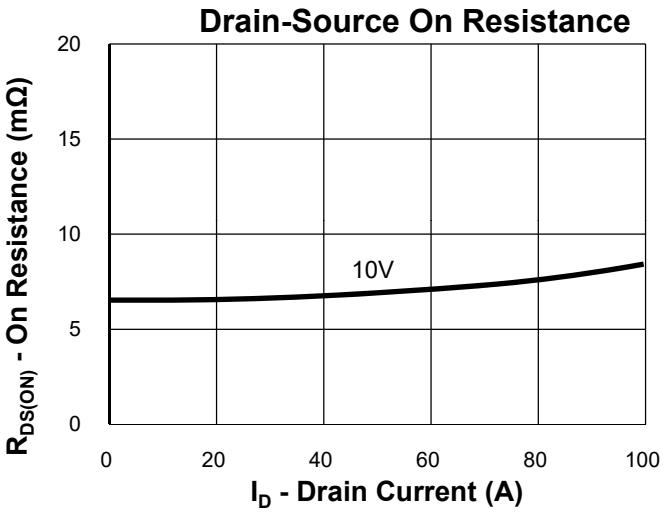

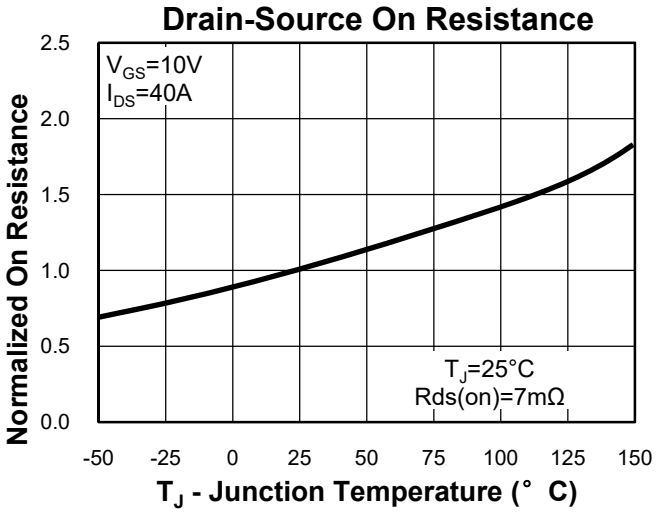

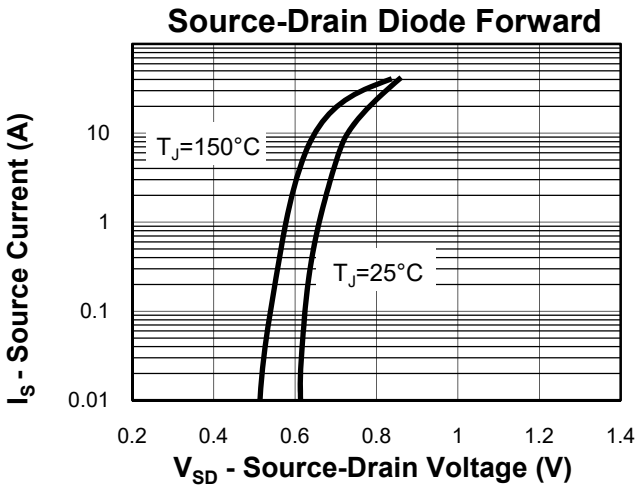

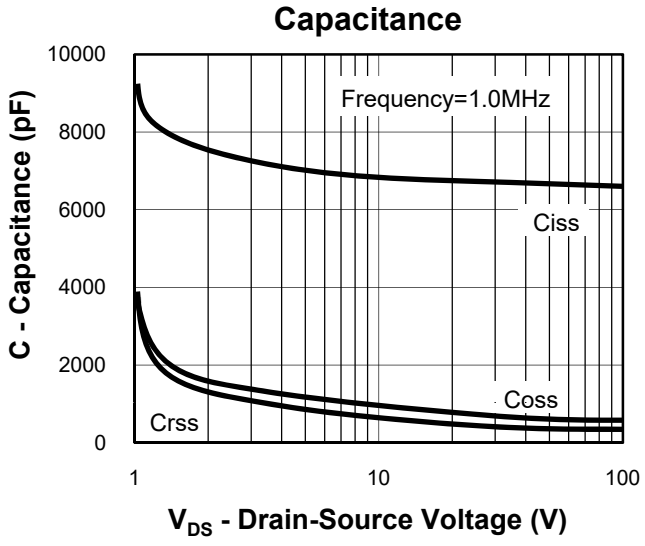

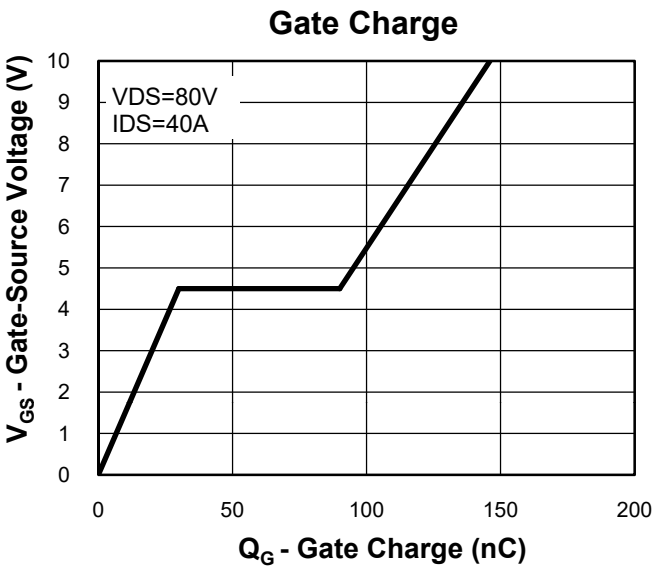

Package Information

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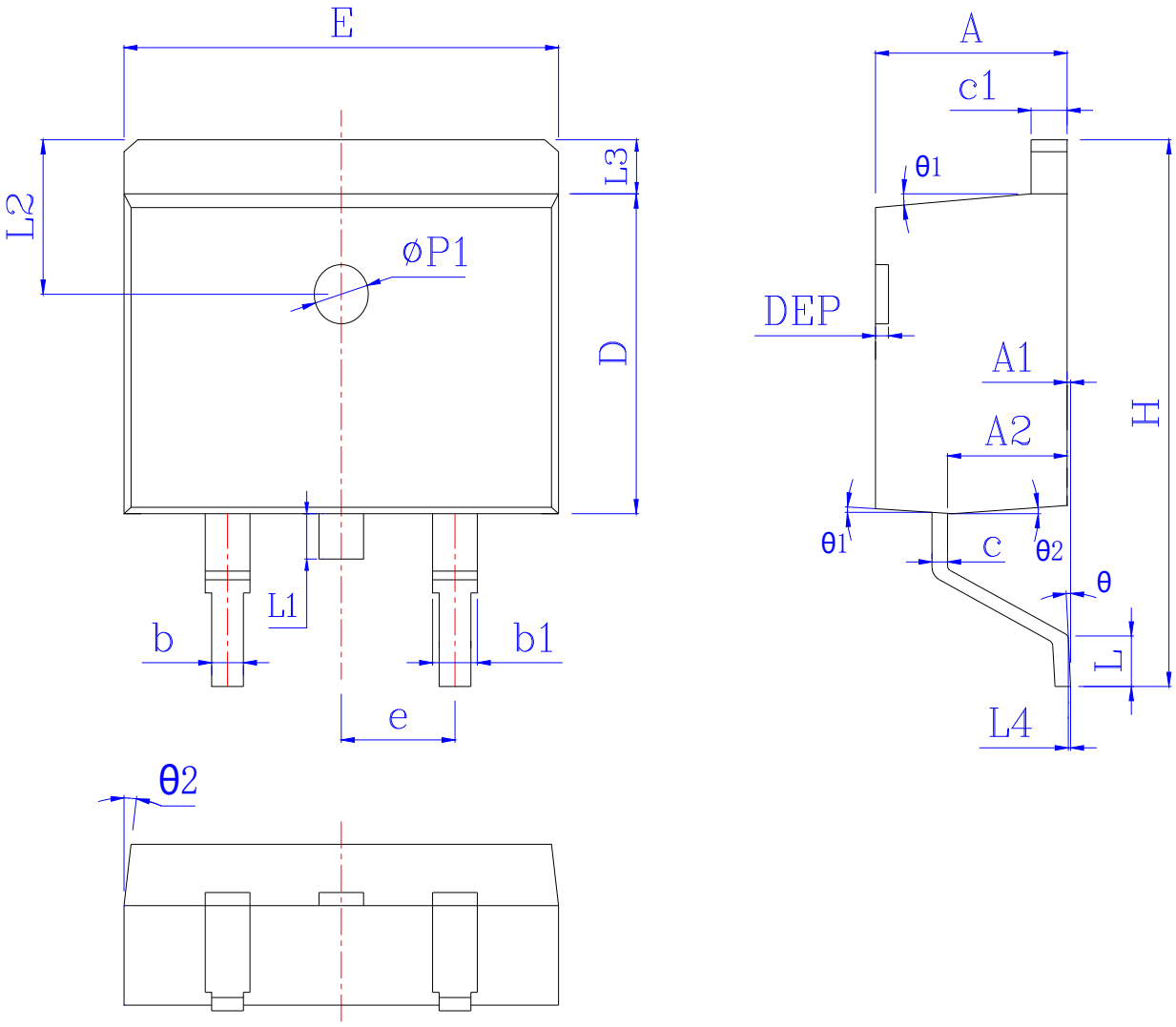
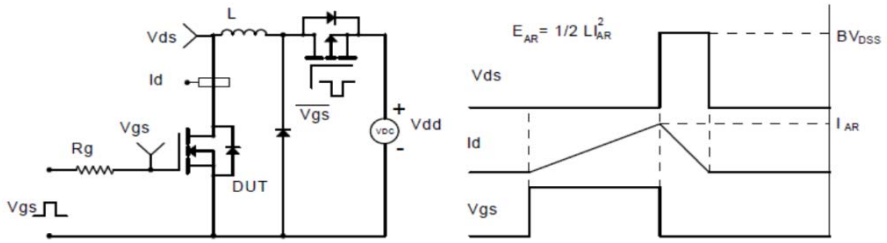
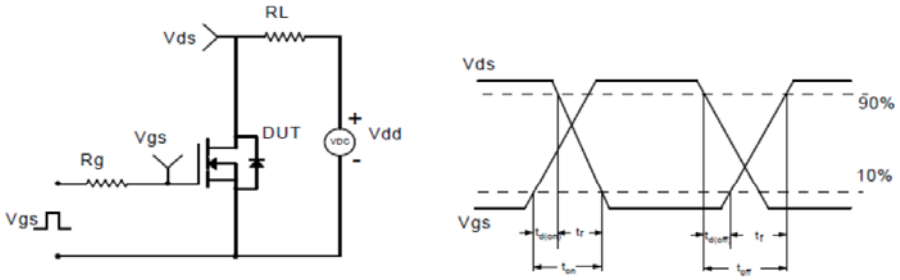


SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.55	4.72	0.173	0.179	0.186	L	1.94	2.30	2.60	0.076	0.091	0.102
A1	0.00	0.10	0.25	0.000	0.005	0.010	L3	1.17	1.29	1.40	0.046	0.051	0.055
A2	2.59	2.69	2.79	0.102	0.106	0.110	L1	*	*	1.70	*	*	0.067
b	0.76	*	0.90	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							

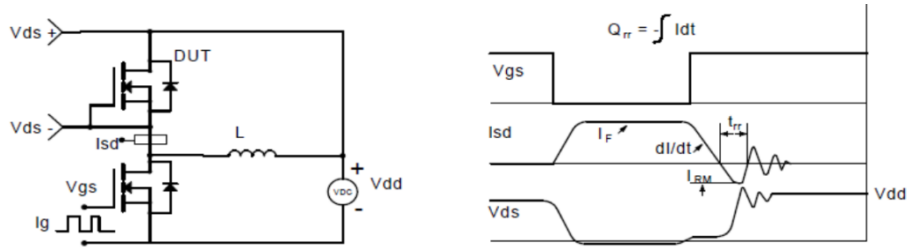
Avalanche Test Circuit and Waveforms



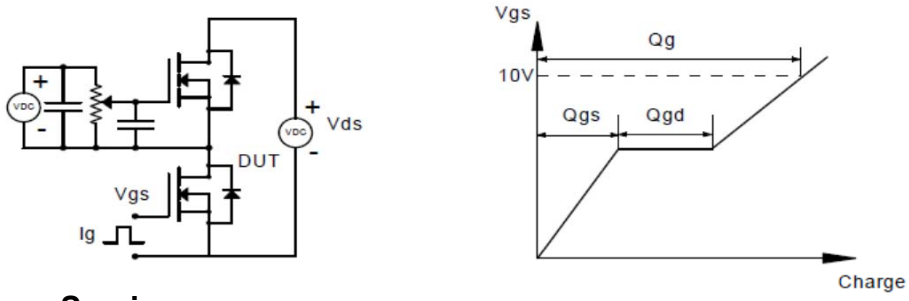
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

Kwansemi Semiconductor Co.,Ltd

Email:Sales@kwansemi.com

Web:www.kwansemi.com

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