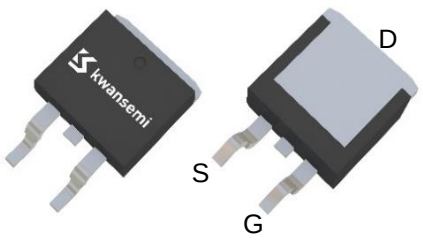
KS4203GA

Single N-Channel Advanced Power MOSFET

Features

- 40V/180A,
  $R_{DS\ (ON)}$ =2.3mΩ(Typ.)@V_{GS}=10V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- High Ruggedness
- 100% Avalanche Tested

Pin Description



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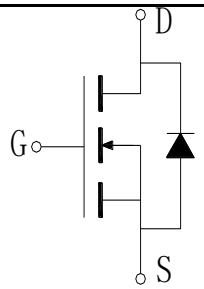


Single N-Channel MOSFET

Applications

- Synchronous Rectification
- UPS Inverter
- High efficiency DC/DC Converters

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		40	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	180	A
Mounted on Large Heat Sink				
I_{DP}①	Pulse Drain Current	T_C=25°C	720	A
I_D②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	180	A
		T_C=100°C	127	
P_D	Maximum Power Dissipation	T_C=25°C	180	W
		T_C=100°C	90	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.83	°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		784	mJ

Electrical Characteristics (T_C=25°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	40			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, 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}=20A		2.3	3	mΩ
		V_{GS}=6V, I_{DS}=10A		4.5	5.6	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V		0.79	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs		71		ns
Q_{rr}	Reverse Recovery Charge			55		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		2.5		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=20V, Frequency=1MHz		5750		pF
C_{oss}	Output Capacitance			655		
C_{rss}	Reverse Transfer Capacitance			475		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=20V, I_{DS}=20A, V_{GEN}=10V,R_G=3Ω		23		ns
t_r	Turn-on Rise Time			67		
$t_{d(OFF)}$	Turn-off Delay Time			49		
t_f	Turn-off Fall Time			31		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=20V, V_{GS}=10V, I_{DS}=20A		95		nC
Q_{gs}	Gate-Source Charge			27		
Q_{gd}	Gate-Drain Charge			25		

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.

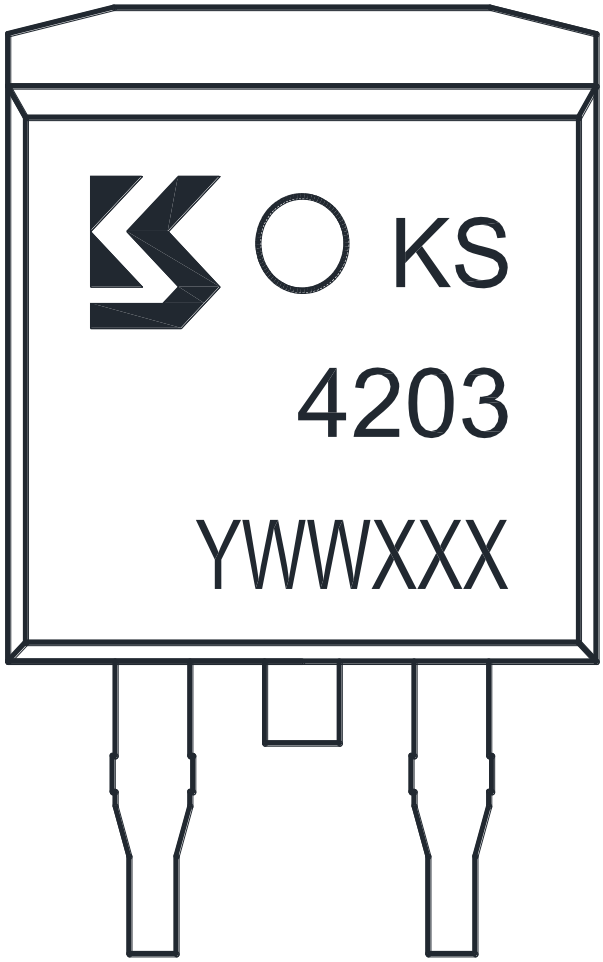
④Limited by T_{Jmax}, Starting T_J = 25°C, I_{ASmax} =56A, L=0.5mH, V_{DD} = 40V, R_G = 25Ω, V_{GS}=10V.Part not recommended for use above this value.100% Final Test at I_{AS}=38A, L=0.5mH.

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

⑥Guaranteed by design, not subject to production testing.

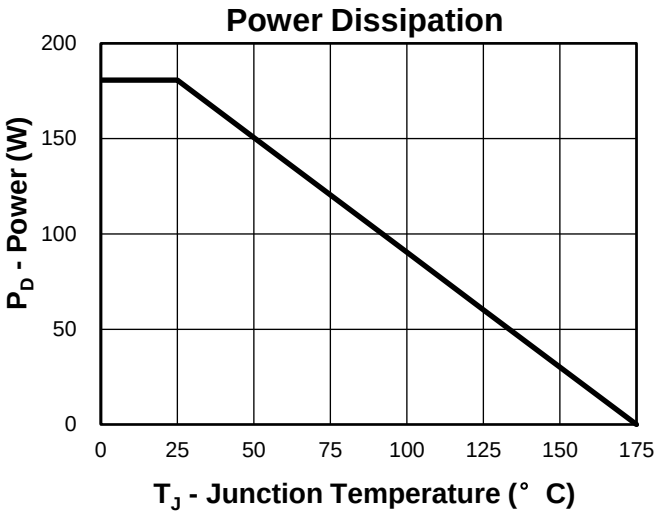
Ordering and Marking Information

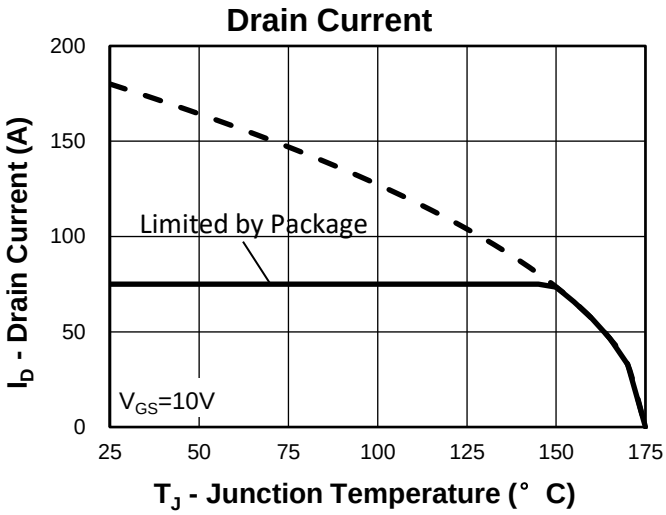
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS4203GA	TO-263	Tape&Reel	800	13''	24mm

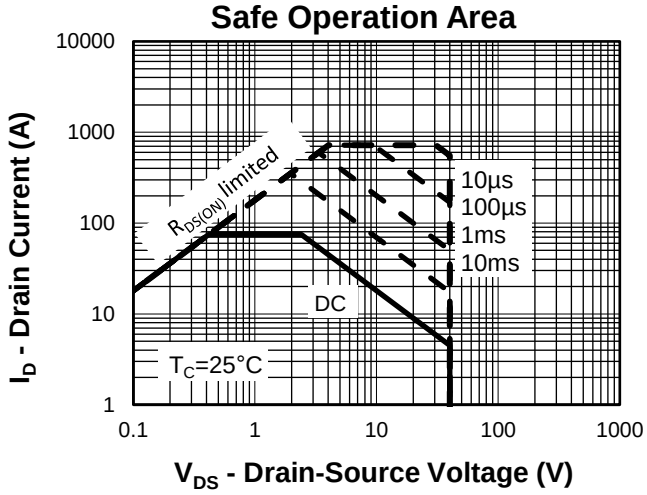


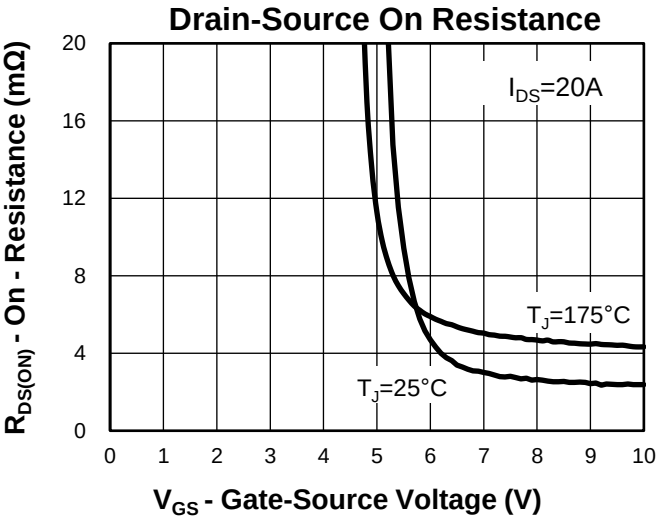
1st Line: Kwansemi LOGO，Kwansemi Code(KS)
2nd Line: Part Number(4203)
3rd Line: Lot Number(YWWXXX)

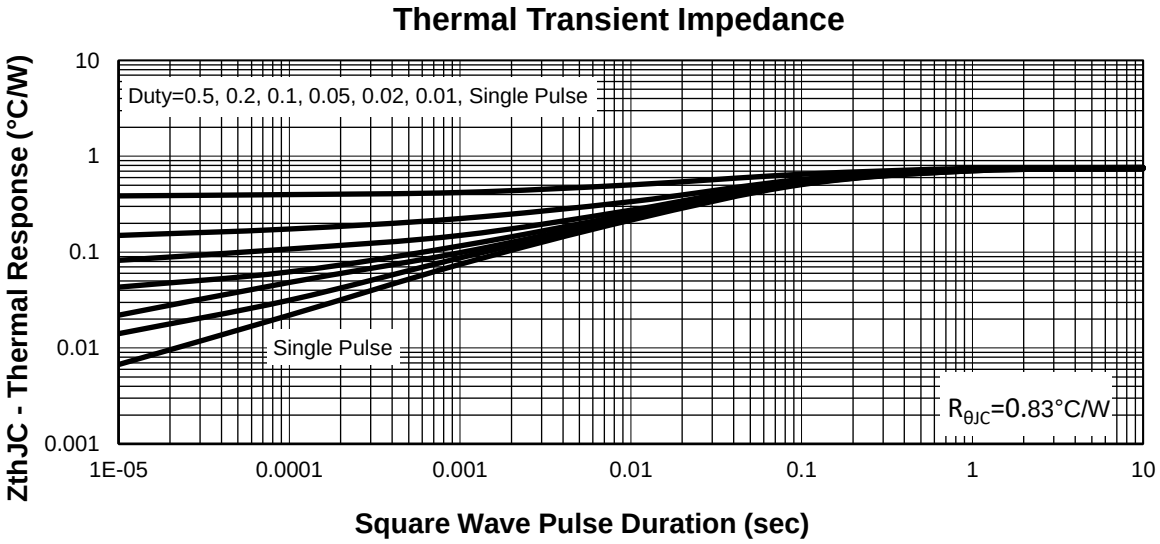
Typical Characteristics





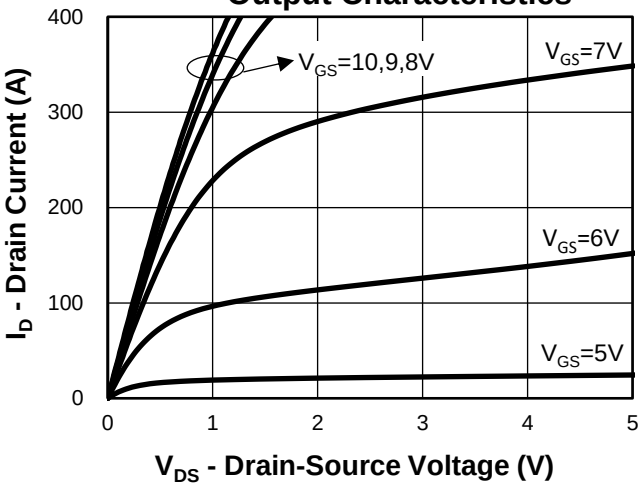




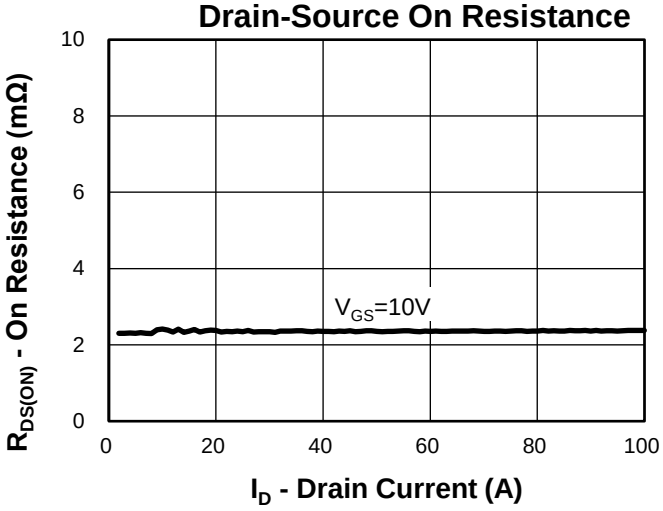


Typical Characteristics

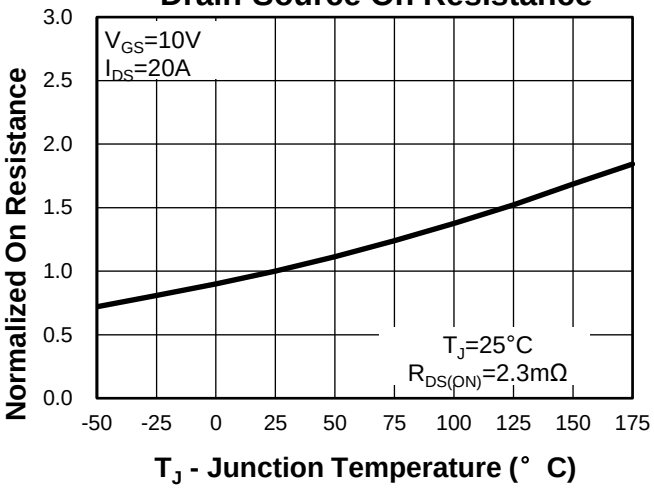
Output Characteristics



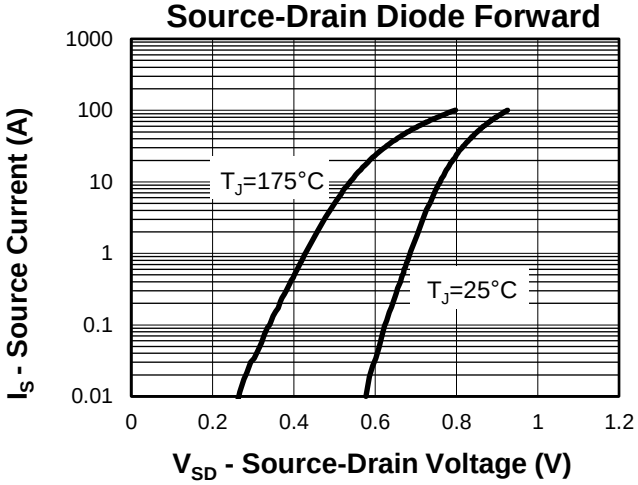
Drain-Source On Resistance



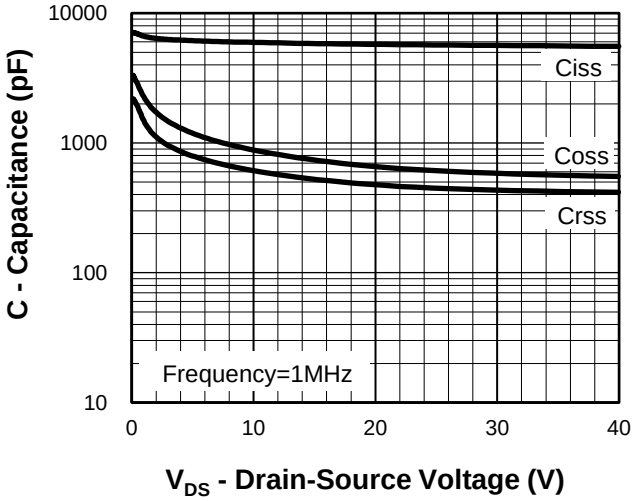
Drain-Source On Resistance



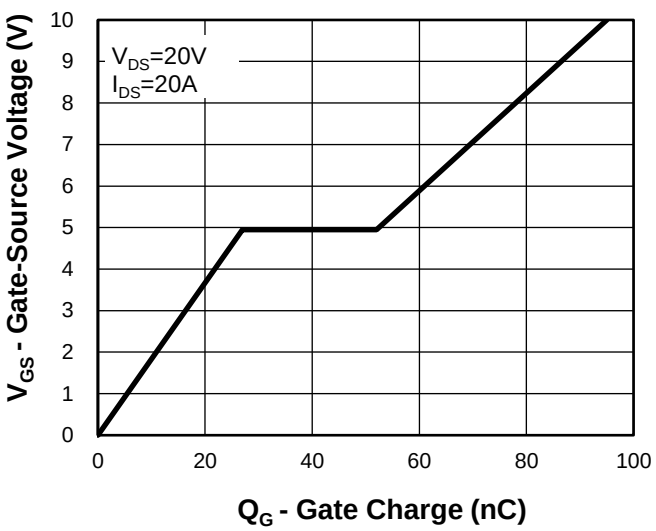
Source-Drain Diode Forward



Capacitance



Gate Charge



Package Information

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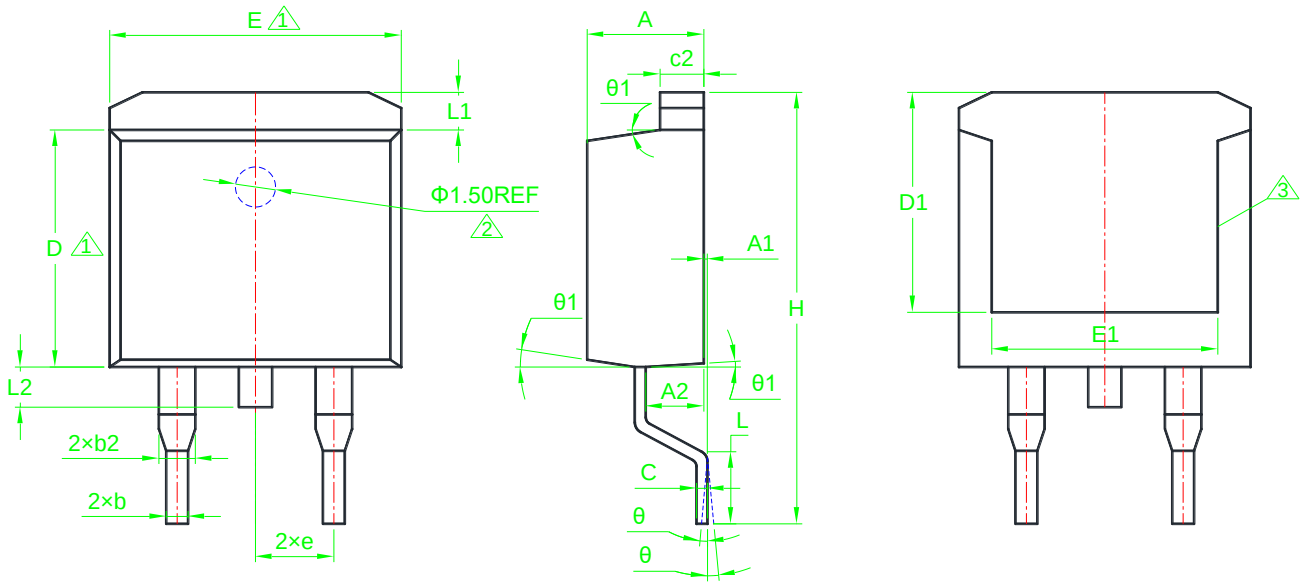


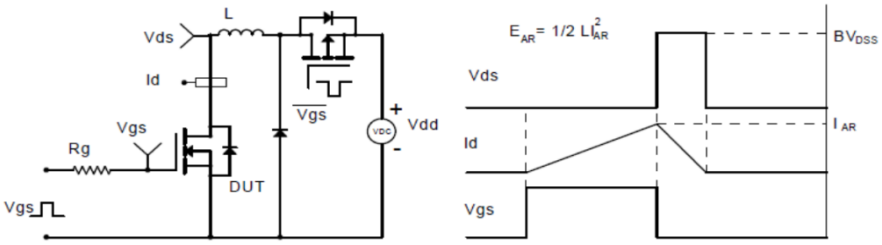
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.50	4.80	0.169	0.177	0.189	e	2.54BSC			0.100BSC		
A1	0.00	0.10	0.25	0.000	0.004	0.010	E	9.90	10.10	10.30	0.390	0.398	0.406
A2	2.20	*	2.80	0.087	*	0.110	E1	7.00	*	8.50	0.276	*	0.335
b	0.70	0.85	0.95	0.028	0.033	0.037	H	14.80	*	15.70	0.583	*	0.618
b2	1.15	*	1.47	0.045	*	0.058	L	2.10	*	2.79	0.083	*	0.110
c	0.38	*	0.65	0.015	*	0.026	L1	1.10	*	1.42	0.043	*	0.056
c2	1.20	1.30	1.40	0.047	0.051	0.055	L2	1.00	*	1.70	0.039	*	0.067
D	8.40	8.90	9.40	0.331	0.350	0.370	θ	0°	*	8°	0°	*	8°
D1	7.10	*	8.20	0.280	*	0.323	θ 1	3°	*	9°	3°	*	9°

1 Dimensions D and E do not include mold flash protrusions or gate burrs.

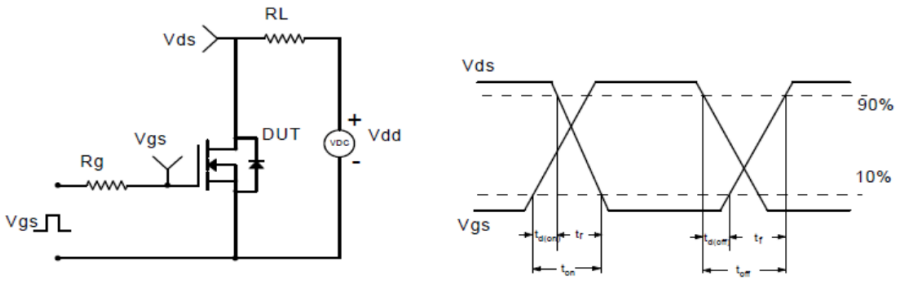
2 The existence and size of demolding hole are variable depending on mold.

3 The size and shape of exposed pad are variable depending on mold.

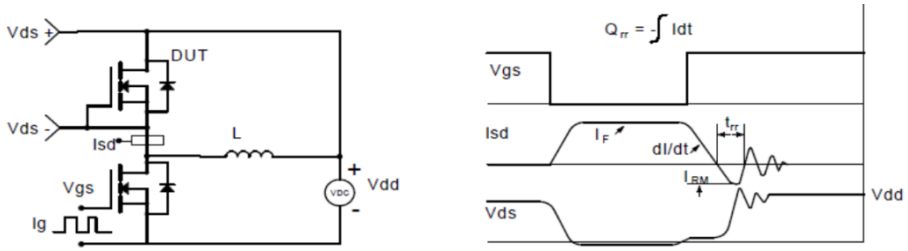
Avalanche Test Circuit and Waveforms



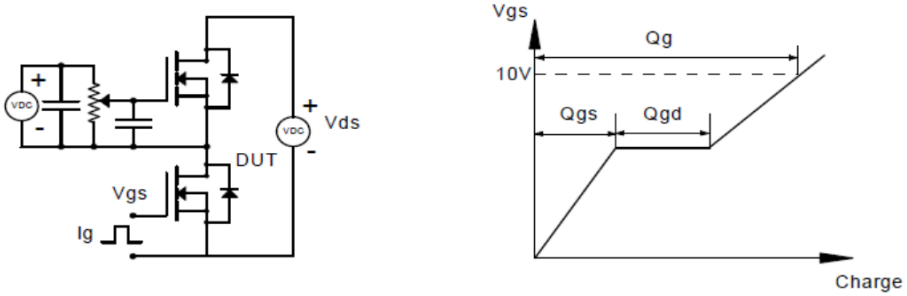
Switching Time Test Circuit and Waveforms



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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