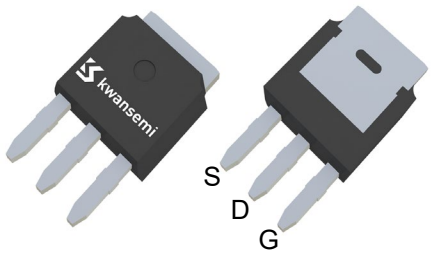
KS1212KA2T

Single N-Channel Advanced Power MOSFET

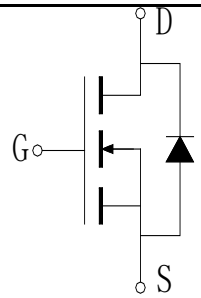
Features

- 100V/36A,
  $R_{DS\ (ON)}$ =15mΩ(Typ.)@V_{GS}=10V
  $R_{DS\ (ON)}$ =21mΩ(Typ.)@V_{GS}=4.5V
- Excellent Q_G x $R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested

Pin Description



TO-251S



Single N-Channel MOSFET

Applications

- Power Switching Appliaction
- LED Backlighting

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_{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	36	A
Mounted on Large Heat Sink				
I_{DP} ①	Pulse Drain Current	T_C=25°C	144	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	36	A
		T_C=100°C	25	
P_D	Maximum Power Dissipation	T_C=25°C	51	W
		T_C=100°C	25	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		2.9	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		72	mJ

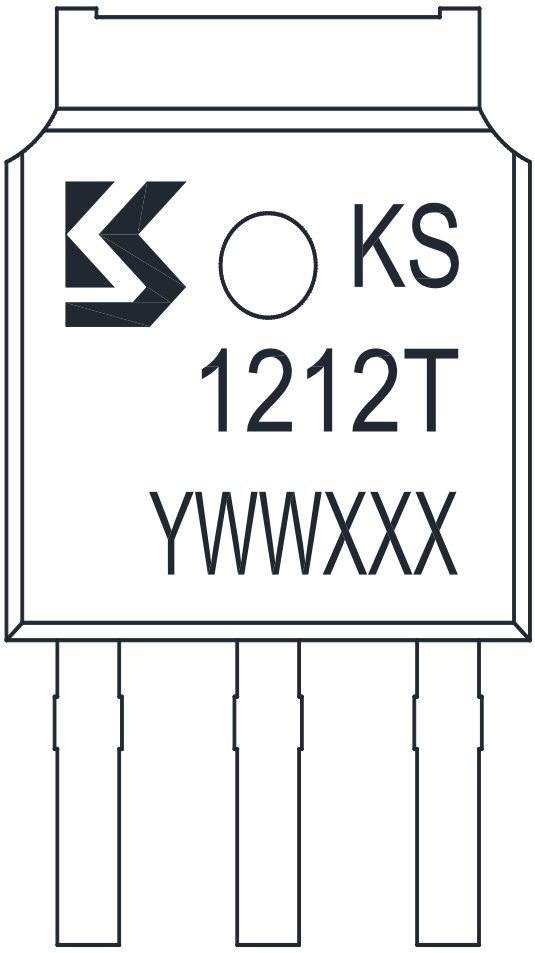
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	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	1.2	2	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		15	20	mΩ
		V_{GS}=4.5V, I_{DS}=16A		21	30	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V		0.9	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs		42		ns
Q_{rr}	Reverse Recovery Charge			55		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.5		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=50V, Frequency=1.0MHz		875		pF
C_{oss}	Output Capacitance			160		
C_{rss}	Reverse Transfer Capacitance			2		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=50V, I_{DS}=20A, V_{GEN}=10V,R_G=3Ω		7		ns
t_r	Turn-on Rise Time			10		
$t_{d(OFF)}$	Turn-off Delay Time			18		
t_f	Turn-off Fall Time			9		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=10V, I_{DS}=20A		17		nC
Q_{gs}	Gate-Source Charge			2.9		
Q_{gd}	Gate-Drain Charge			4.8		

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}, Starting T_J = 25°C, I_{ASmax} =17A, L=0.5mH, V_{DD} = 48V, R_G = 25Ω, V_{GS}=10V.Part not recommended for use above this value.100% Final Test at I_{AS}=12A, L=0.5mH.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

Ordering and Marking Information

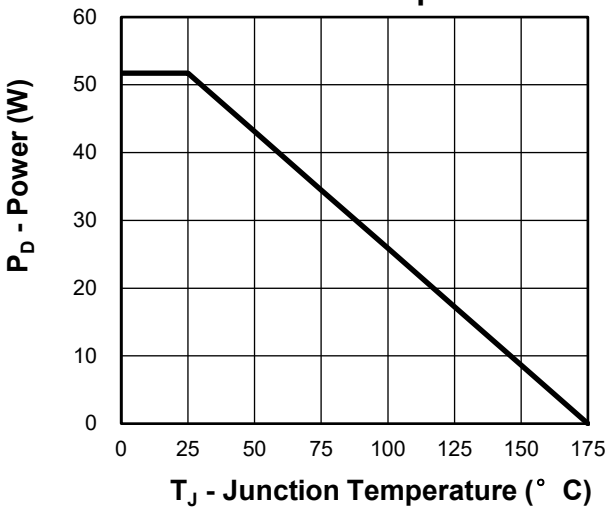
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS1212KA2T	TO-251S	Tube	75	-	-



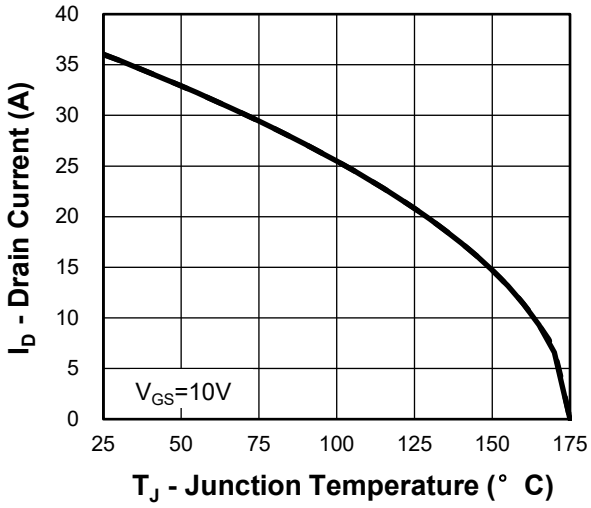
1st Line: Kwansemi LOGO， Kwansemi Code(KS)
2nd Line: Part Number(1212T)
3rd Line: Lot Number(YWWXXX)

Typical Characteristics

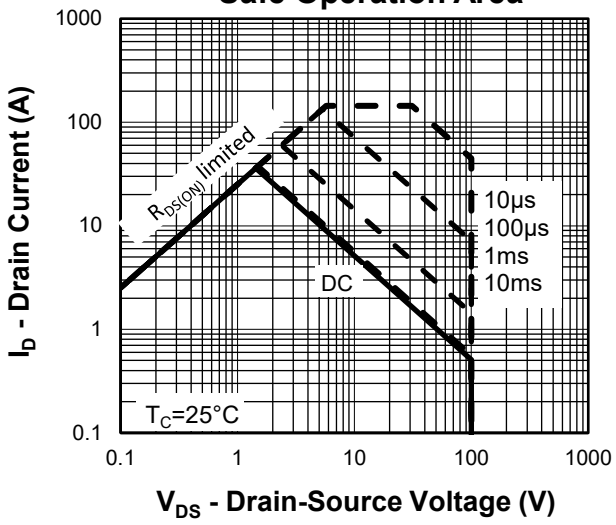
Power Dissipation



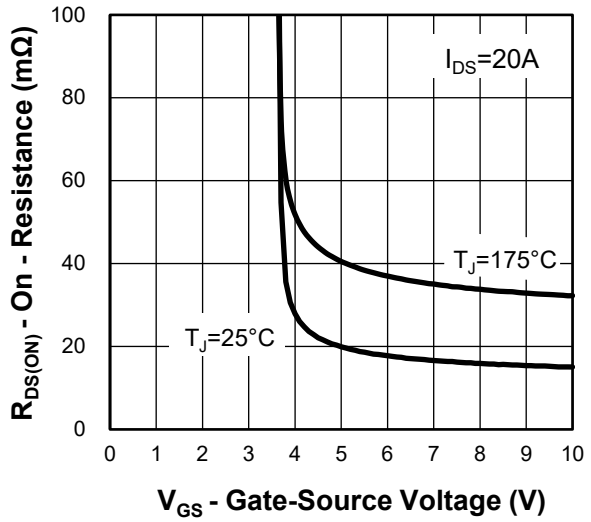
Drain Current



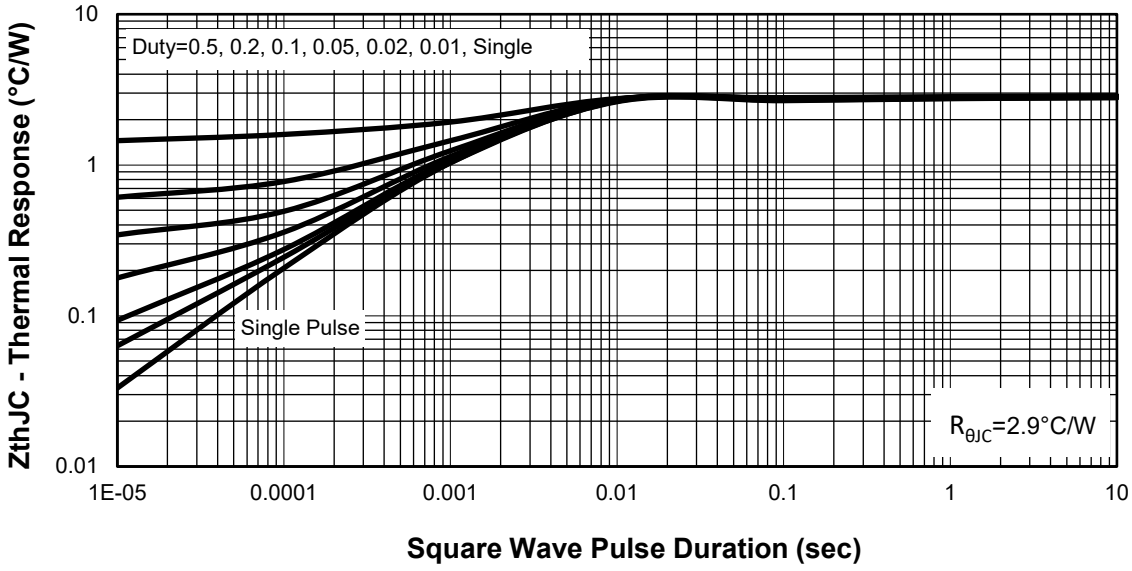
Safe Operation Area



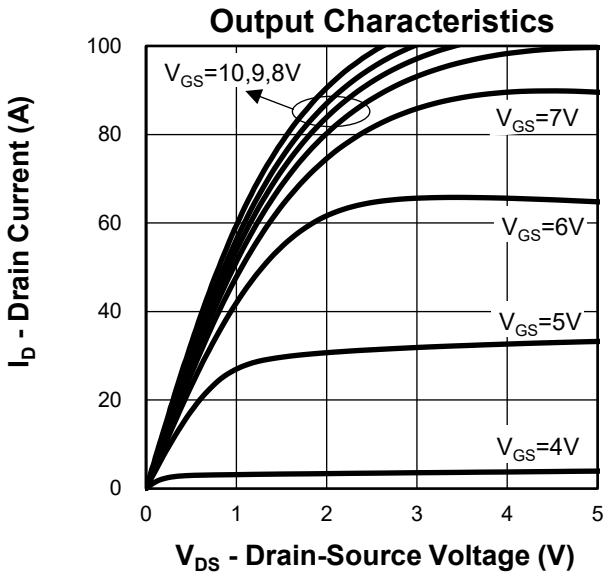
Drain-Source On Resistance

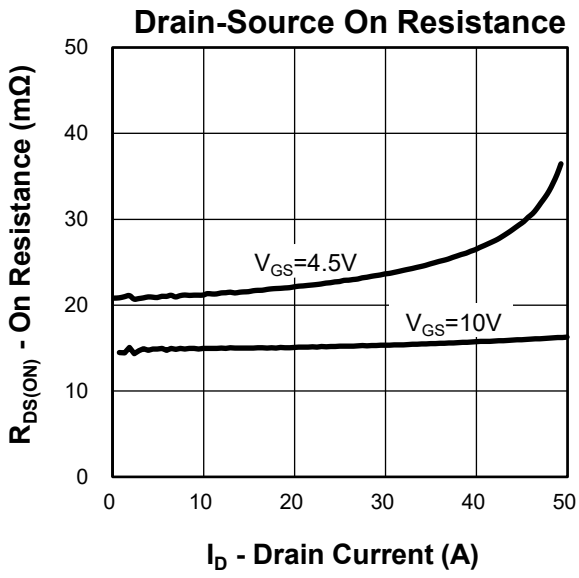


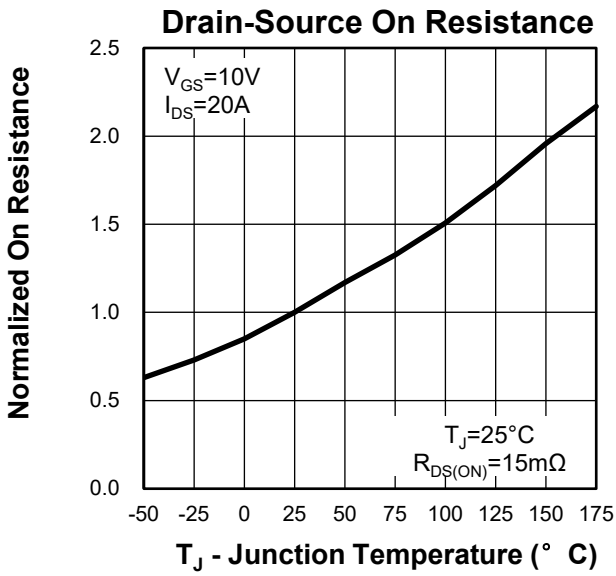
Thermal Transient Impedance

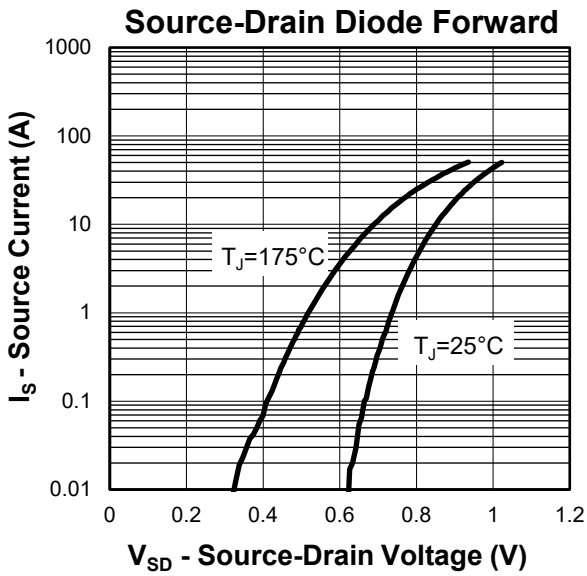


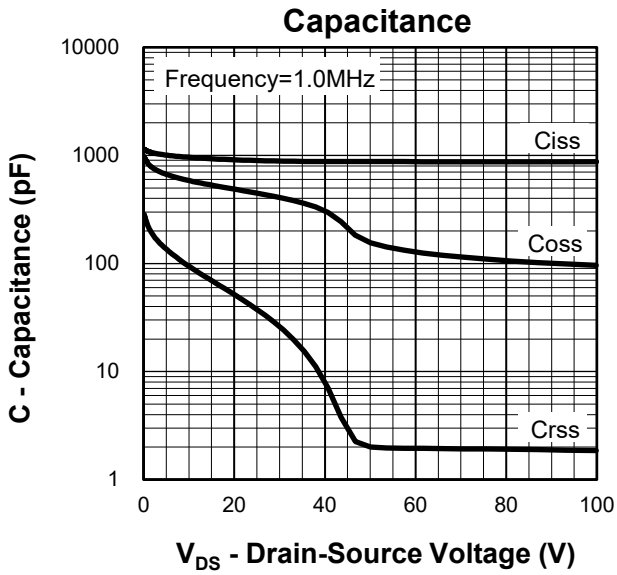
Typical Characteristics

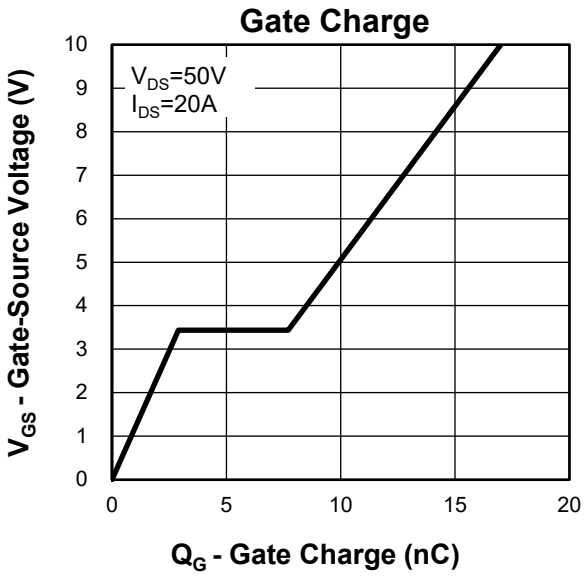






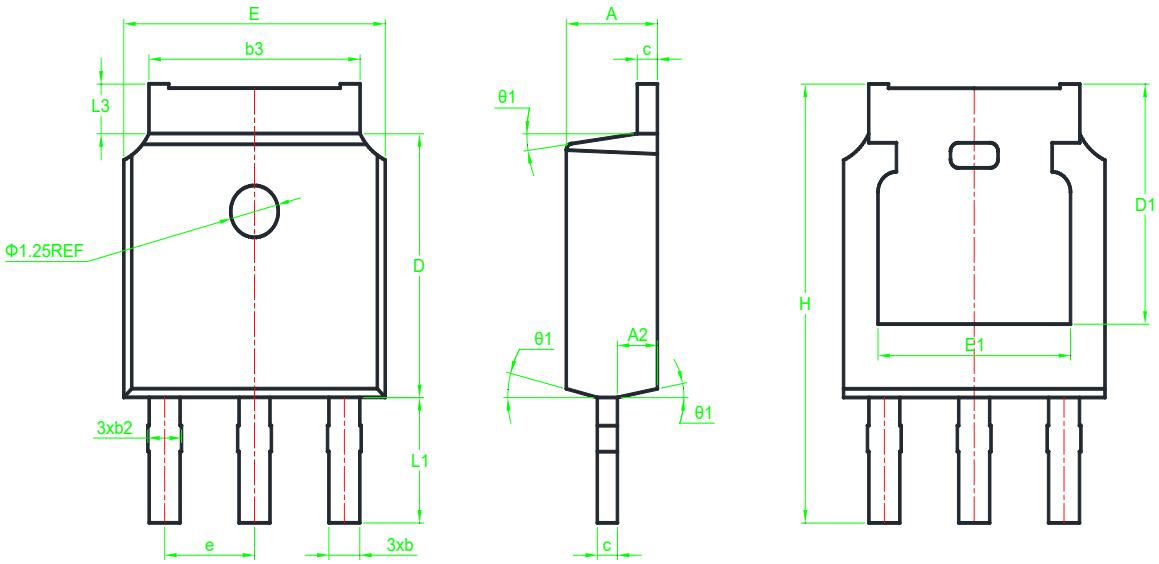






Package Information

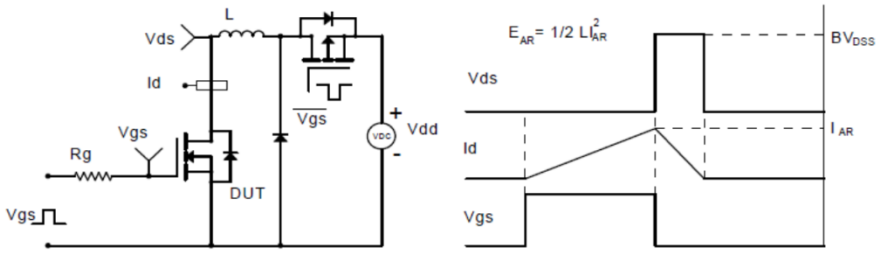
TO-251S



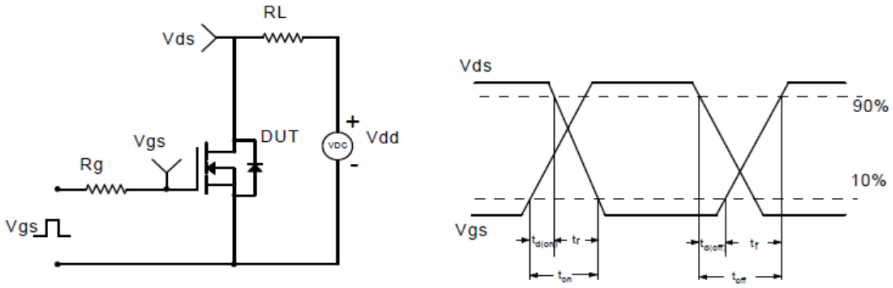
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.40	0.087	0.091	0.094	e	2.19	2.29	2.39	0.086	0.090	0.094
A2	0.90	1.00	1.10	0.035	0.039	0.043	E	6.50	6.60	6.70	0.256	0.260	0.264
b	0.70	*	0.85	0.028	*	0.033	E1	4.70	*	*	0.185	*	*
b2	0.70	*	0.90	0.028	*	0.035	H	10.40	10.70	11.00	0.409	0.421	0.433
b3	5.13	5.33	5.46	0.202	0.210	0.215	L1	3.50REF			0.138REF		
c	0.45	*	0.60	0.018	*	0.024	L3	0.90	*	1.25	0.035	*	0.049
D	6.00	6.10	6.20	0.236	0.240	0.244	θ1	5°	*	9°	*	*	*
D1	5.25	*	*	0.207	*	*							

Note: Dimensions do not inclusive burrs and mold flash.

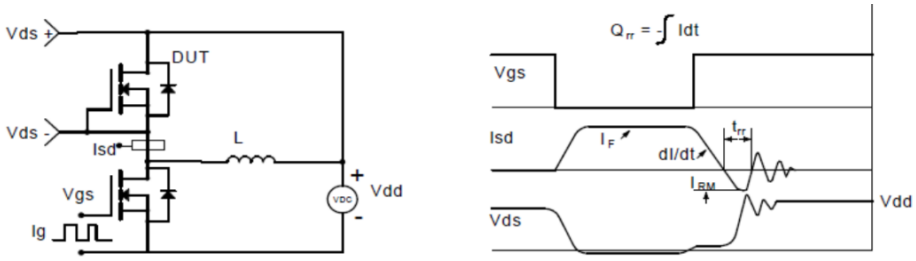
Avalanche Test Circuit and Waveforms



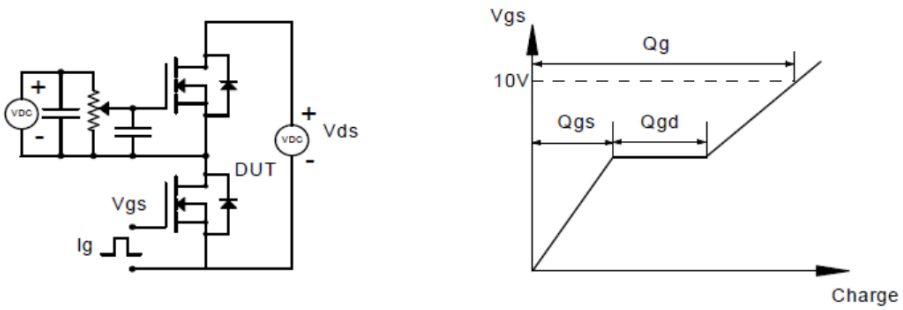
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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