

Features

- 100V/21A,
 $R_{DS(ON)} = 40m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 43m\Omega(Typ.)@V_{GS}=4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

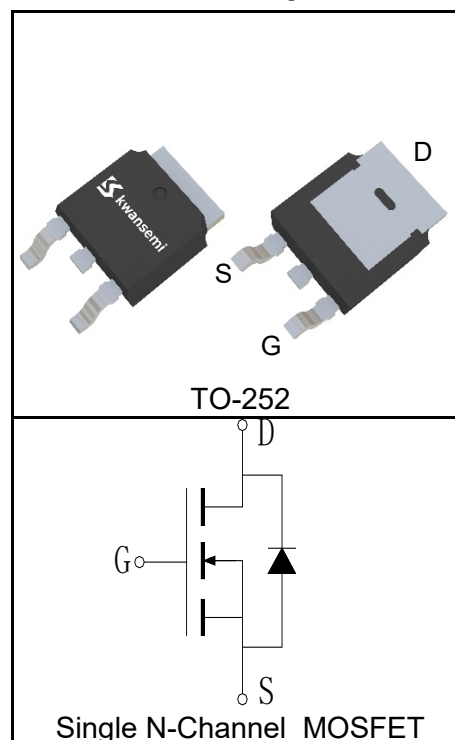
Applications

- Power Switching Appliaction
- Load Switching



Halogen-Free

Pin Description



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	21	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	84	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	21	A
		T _C =100°C	14	
P _D	Maximum Power Dissipation	T _C =25°C	55	W
		T _C =100°C	27	
R _{θJC}	Thermal Resistance-Junction to Case		2.7	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		72	mJ

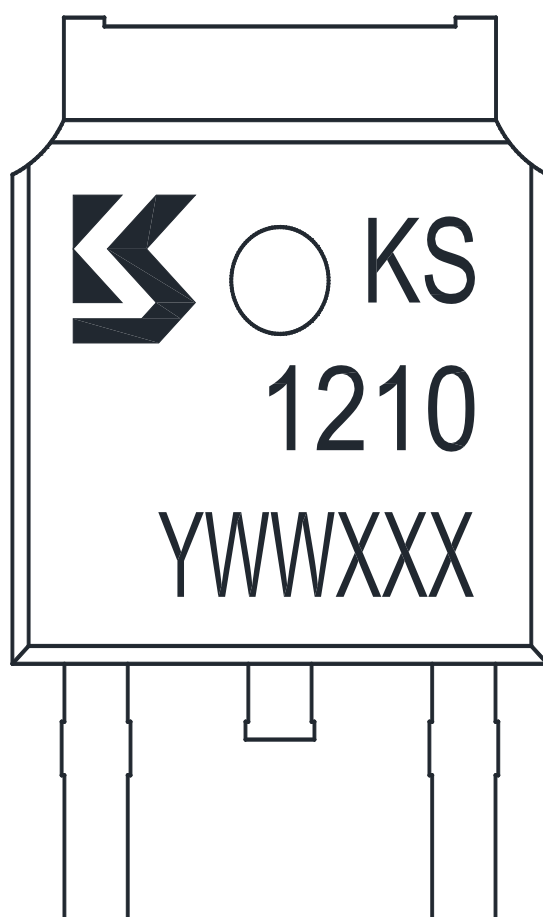
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

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	1.1	1.5	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		40	45	mΩ
		V _{GS} =4.5V, I _{DS} =15A		43	50	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V		0.86	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		33		ns
Q _{rr}	Reverse Recovery Charge			54		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2.2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz		1980		pF
C _{oss}	Output Capacitance			80		
C _{rss}	Reverse Transfer Capacitance			65		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, I _{DS} =20A, V _{GEN} =10V, R _G =3Ω		12		ns
t _r	Turn-on Rise Time			25		
t _{d(OFF)}	Turn-off Delay Time			44		
t _f	Turn-off Fall Time			11		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =20A		44		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			10		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} , Starting $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = 17A$, $L=0.5\text{mH}$, $V_{DD} = 50V$, $R_G = 25\Omega$, $V_{GS}=10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS}=11A$, $L=0.5\text{mH}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS1210DA	TO-252	Tape&Reel	2500	13"	16mm

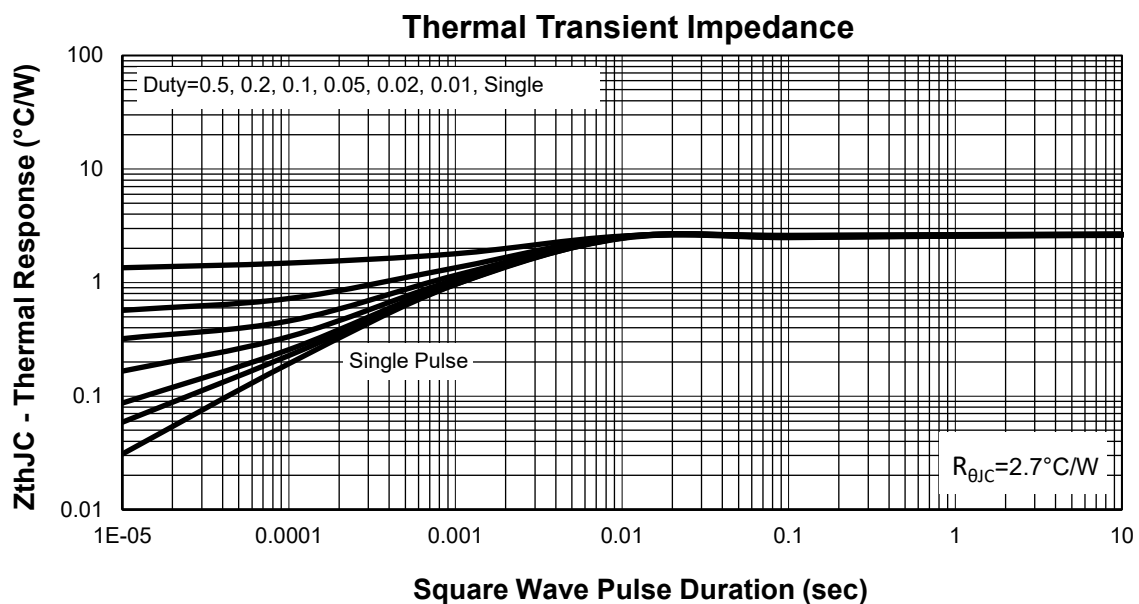
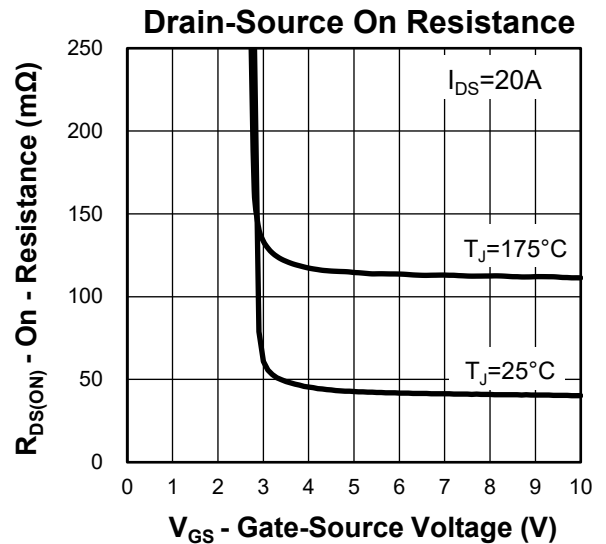
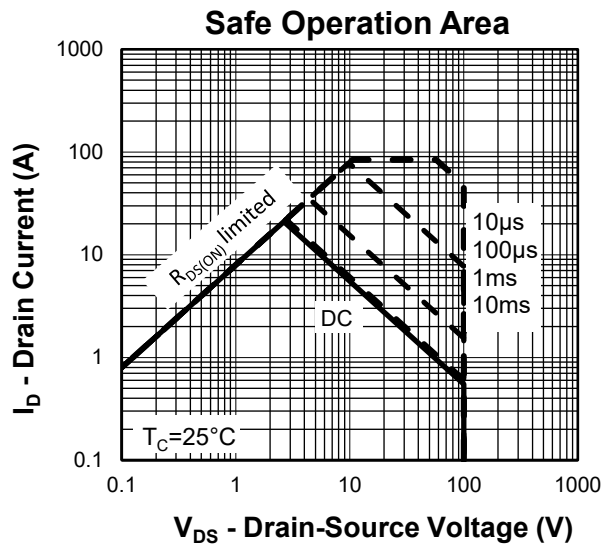
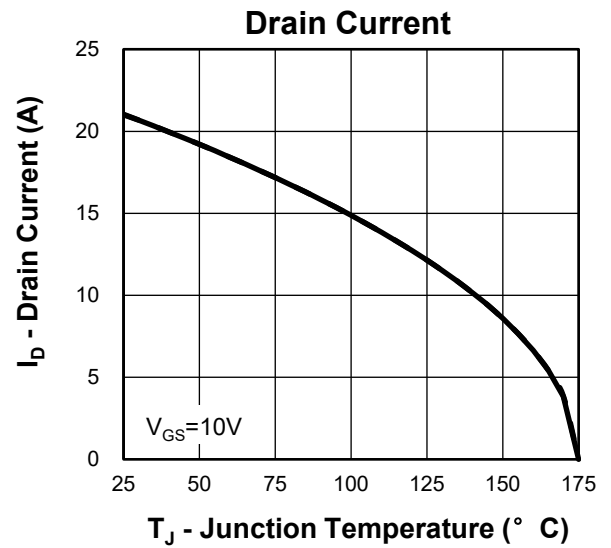
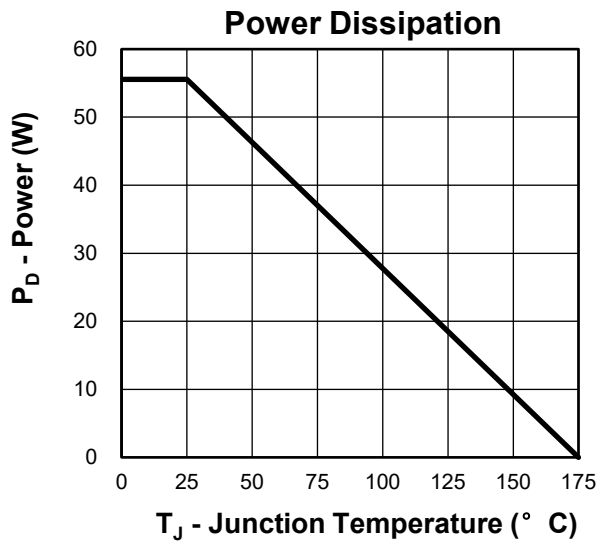


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

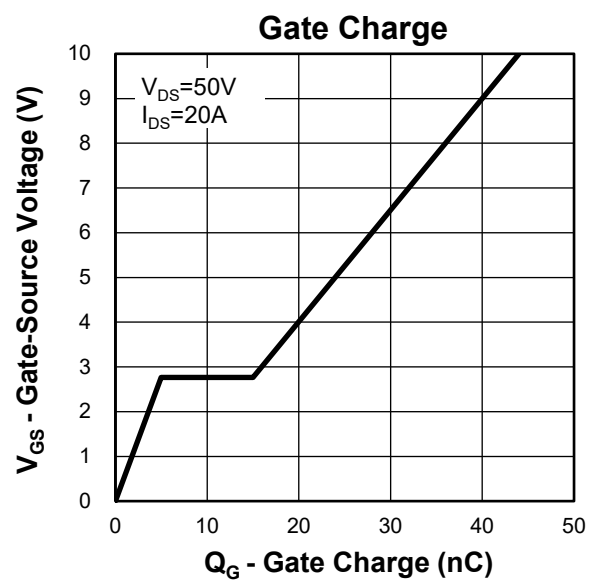
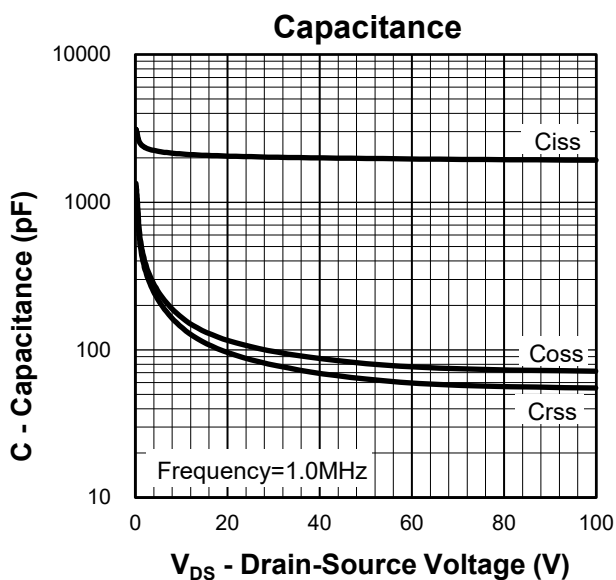
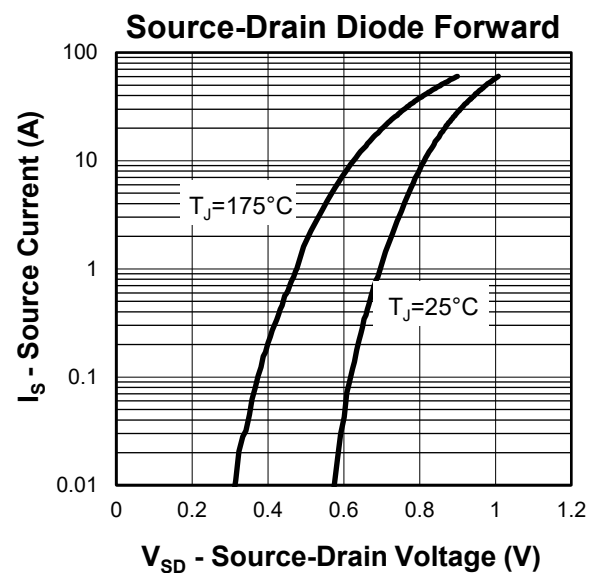
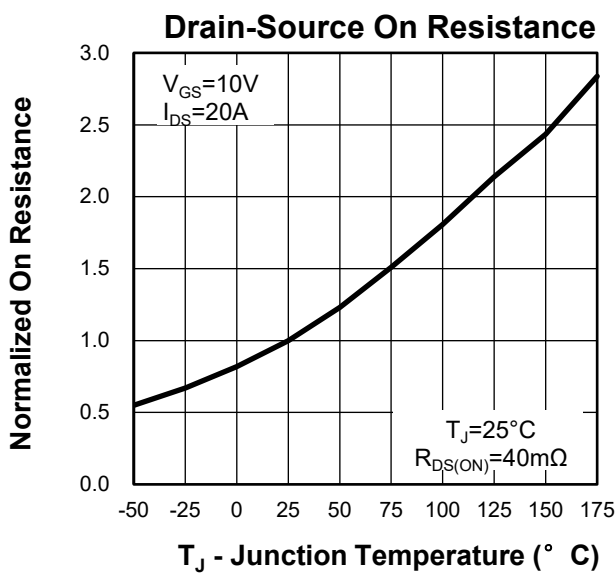
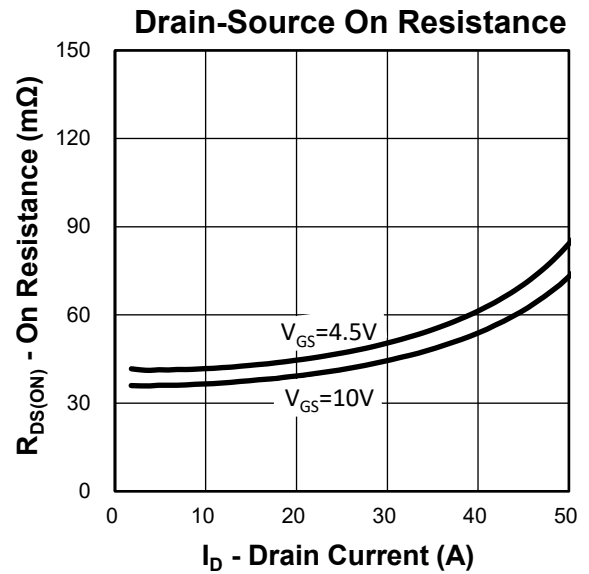
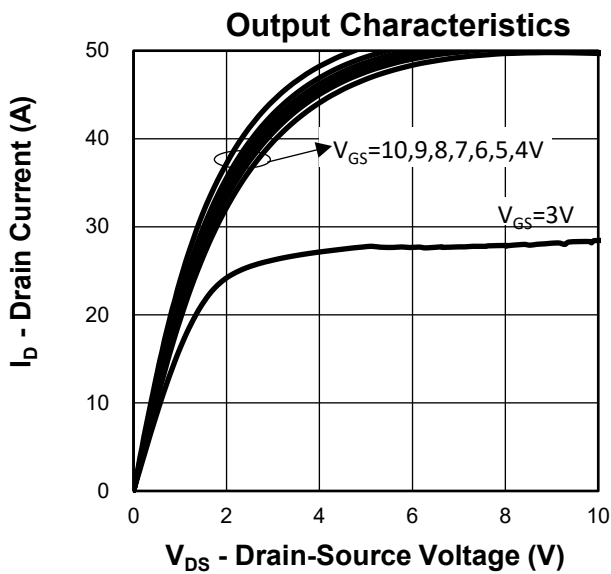
2nd Line: Part Number(1210)

3rd Line: Lot Number(YWWXXX)

Typical Characteristics

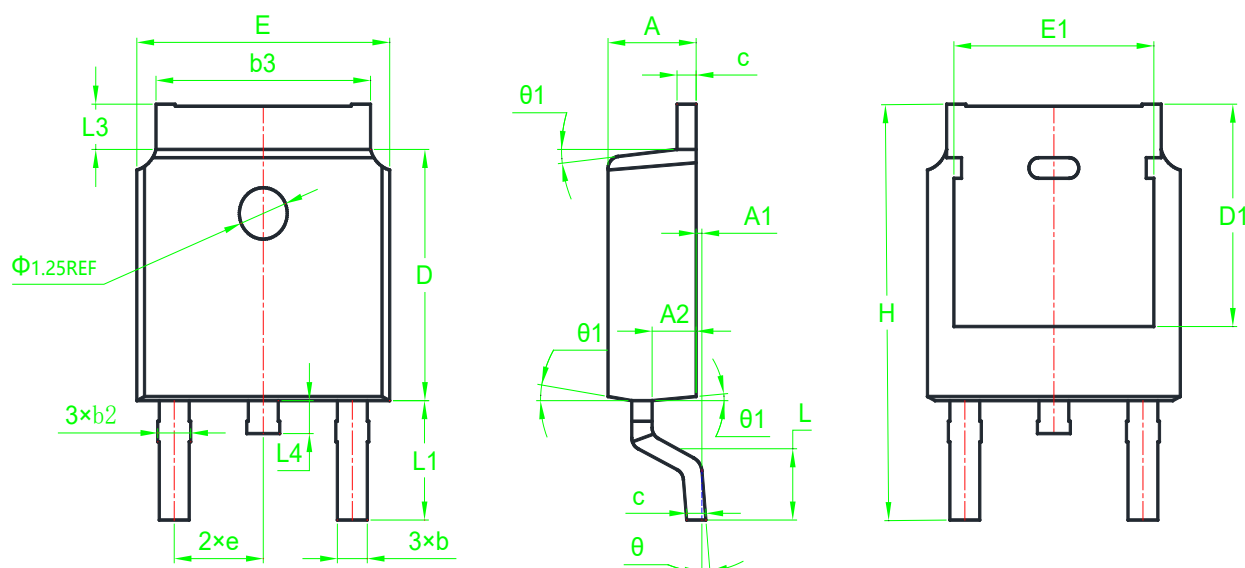


Typical Characteristics



Package Information

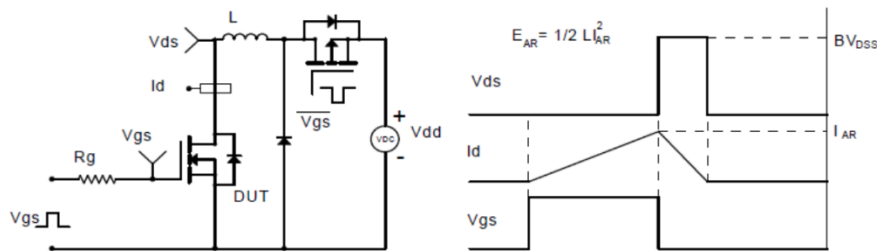
TO-252



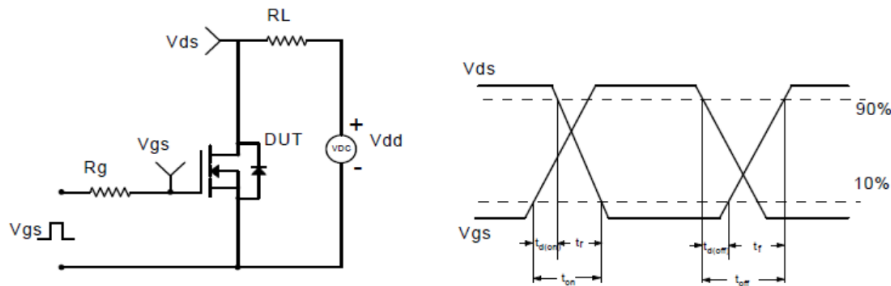
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.38	0.087	0.091	0.094	E	6.40	6.60	6.70	0.252	0.260	0.264
A1	0.00	*	0.15	0.000	*	0.006	E1	4.55	*	5.15	0.179	*	0.203
A2	0.90	1.00	1.10	0.035	0.039	0.043	H	9.60	10.10	10.40	0.378	0.398	0.409
b	0.65	0.75	0.85	0.026	0.030	0.033	L	1.40	1.50	1.70	0.055	0.059	0.067
b2	0.72	*	0.90	0.028	*	0.035	L1	2.90REF			0.114REF		
b3	5.13	5.33	5.46	0.202	0.210	0.215	L3	0.90	*	1.25	0.035	*	0.049
c	0.47	0.51	0.54	0.019	0.020	0.021	L4	0.60	*	1.00	0.024	*	0.039
D	6.00	6.10	6.20	0.236	0.240	0.244	theta	0°	*	10°	0°	*	10°
D1	5.25	5.35	5.60	0.207	0.211	0.220	theta1	5°	*	9°	5°	*	9°
e	2.286BSC			0.090BSC									

Note: Dimensions do not inclusive burrs and mold flash.

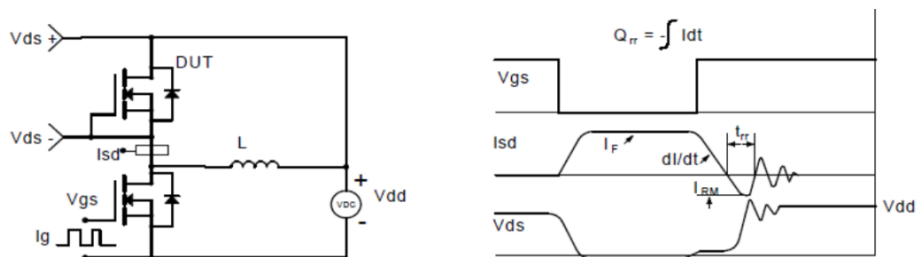
Avalanche Test Circuit and Waveforms



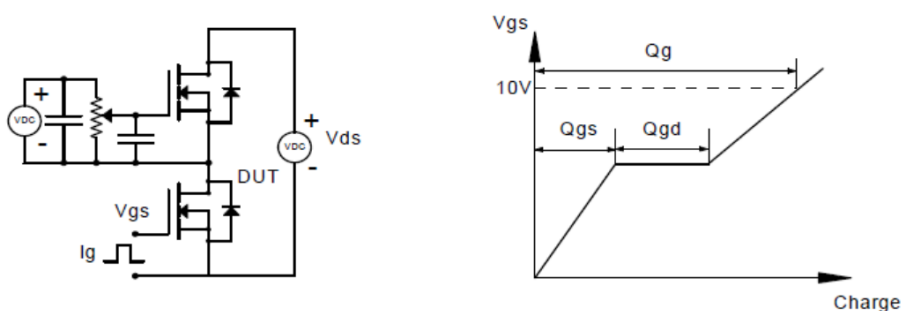
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

Kwansemi Semiconductor Co.,Ltd

Email:Sales@kwansemi.com

Web:www.kwansemi.com

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