

Features

- 650V/44A,
 $R_{DS(ON)} = 70m\Omega(Typ.) @ V_{GS}=10V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SuperJunction Technology
- Ultra-fast and Robust Body Diode
- Low Switching Loss
- 100% Rg and Avalanche Tested

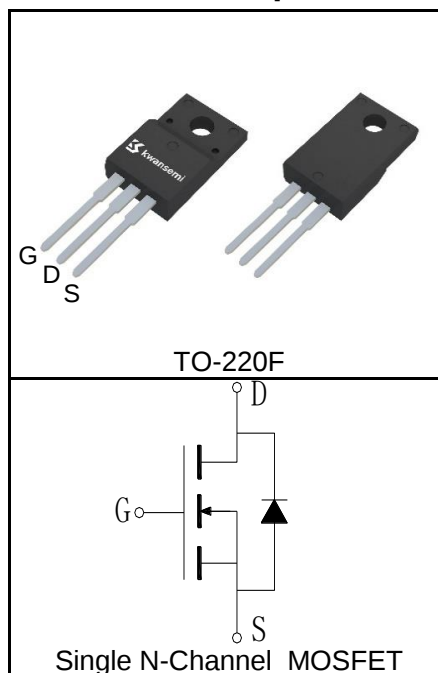
Applications

- Switch Mode Power Supply



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		650	V
V _{GSS}	Gate-Source Voltage		±30	
T _{Jmax}	Maximum Junction Temperature		150	°C
T _J ,T _{STG}	Operating and Storage Temperature Range		-55 to 150	°C
dv/dt	MOSFET dv/dt ruggedness, V _{DS} =0...480 V		50	V/ns
dv/dt	Reverse diode dv/dt, V _{DS} =0...480 V, I _{SD} ≤I _D		15	V/ns
V _{ISO}	Insulation Withstand Voltage (AC-RMS)		4000	V
I _S	Diode Continuous Forward Current	T _C =25°C	44	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	132	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	44	A
		T _C =100°C	27	
P _D	Maximum Power Dissipation	T _C =25°C	39	W
		T _C =100°C	15	
R _{θJC}	Thermal Resistance-Junction to Case		3.2	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		2560	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	650			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V			5	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2.5	3.5	4.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±30V, V _{DS} =0V			±100	nA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A		70	80	mΩ
		V _{GS} =6V, I _{DS} =10A		75	100	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V		0.98	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		113		ns
Q _{rr}	Reverse Recovery Charge			0.94		μC
I _{rrm}	Peak Reverse Recovery Current			16		A
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		10		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =325V, Frequency=200KHz		3495		pF
C _{oss}	Output Capacitance			85		
C _{rss}	Reverse Transfer Capacitance			4		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =325V, I _{DS} =20A, V _{GEN} =10V,R _G =3Ω		16		ns
t _r	Turn-on Rise Time			11		
t _{d(OFF)}	Turn-off Delay Time			9		
t _f	Turn-off Fall Time			28		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =325V, V _{GS} =10V, I _{DS} =20A		93		nC
Q _{gs}	Gate-Source Charge			22		
Q _{gd}	Gate-Drain Charge			46		
V _{plateau}	Gate Plateau Voltage			6.5		V

- 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 $T_J = 25^{\circ}\text{C}$, $I_{AS} = 8A$, $L_{MAX} = 80\text{mH}$, $V_{DD} = 150V$, $R_G = 25\Omega$, $V_{GS} = 10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = 8A$, $L = 28\text{mH}$.
 - 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
KS65R080FAJF1	TO-220F	Tube	50	-	-

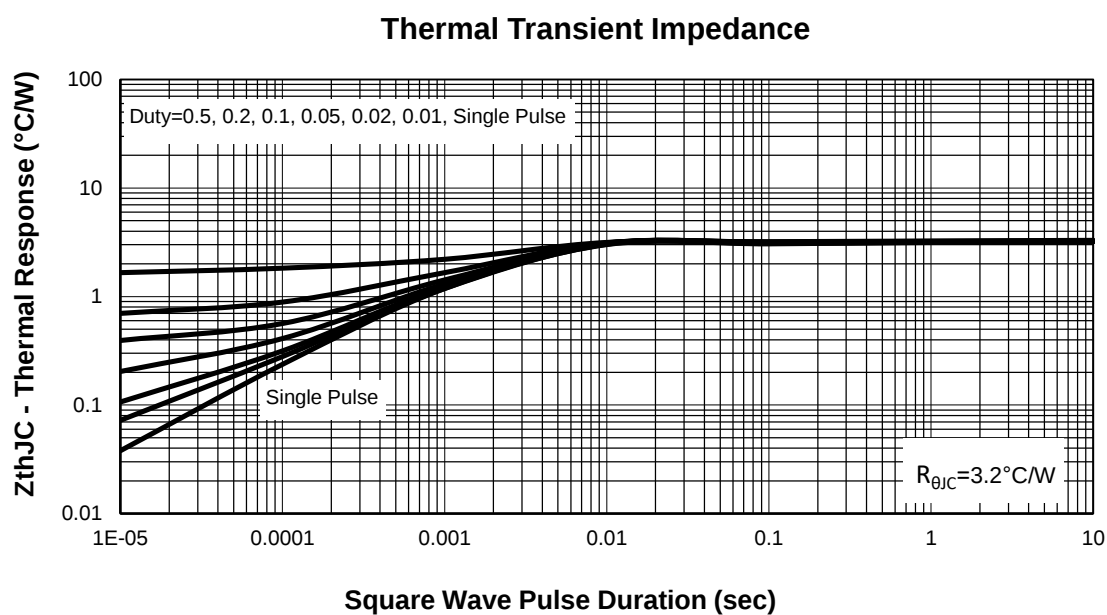
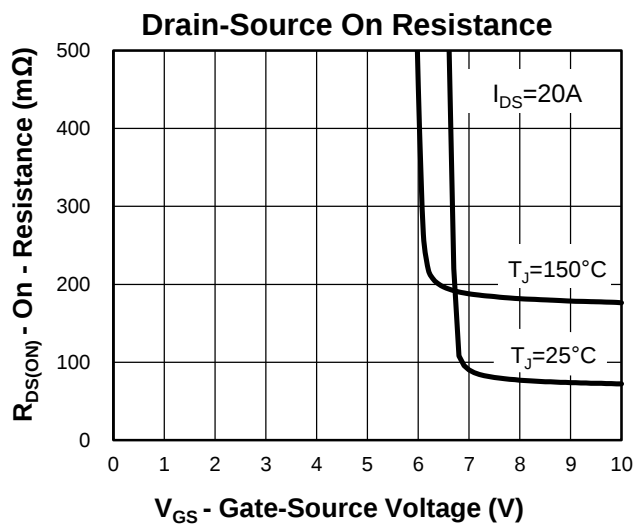
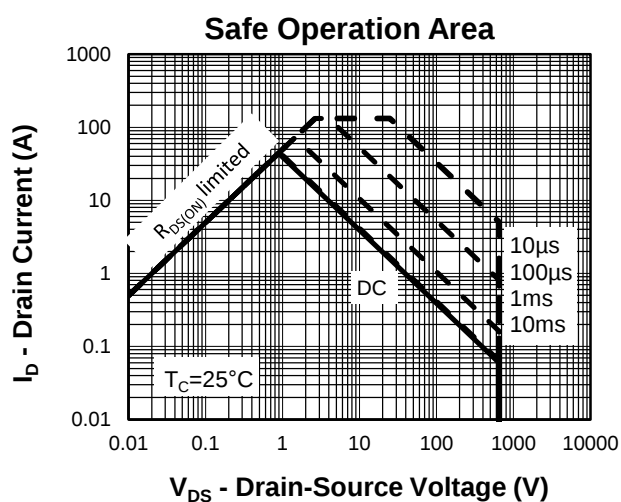
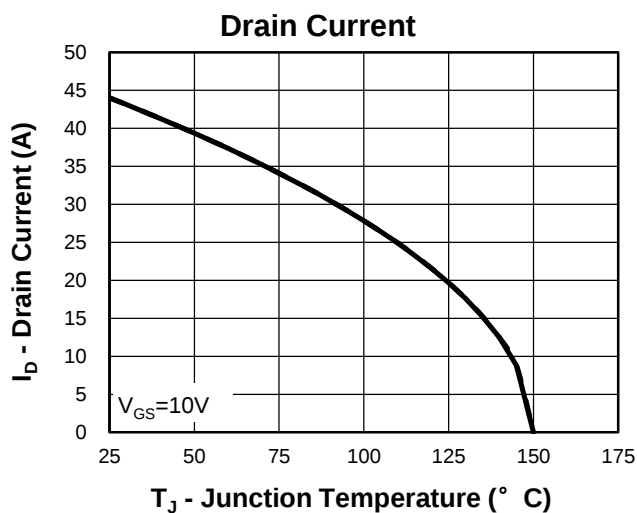
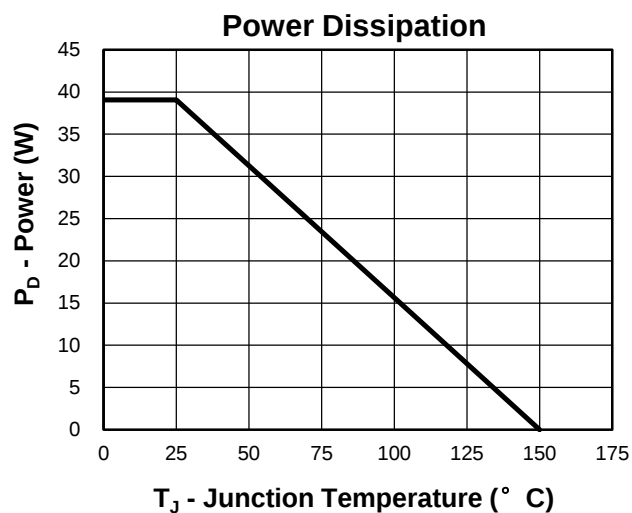


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

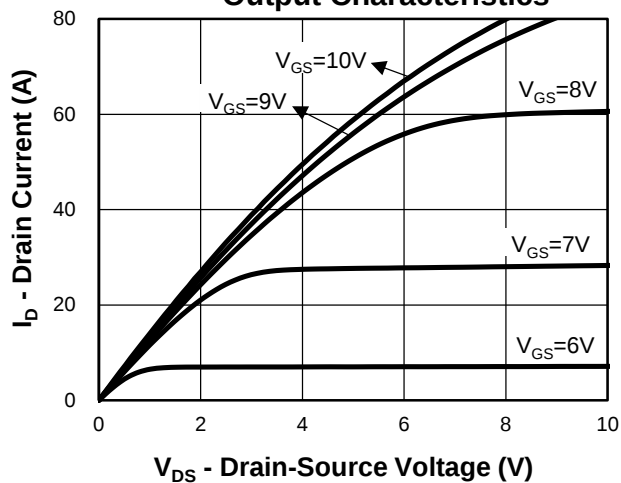
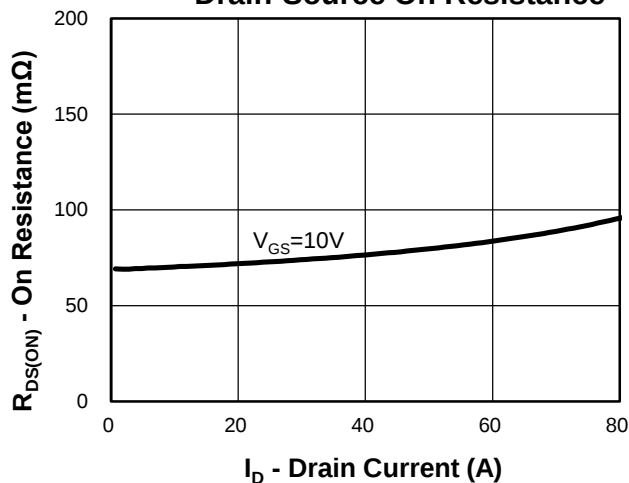
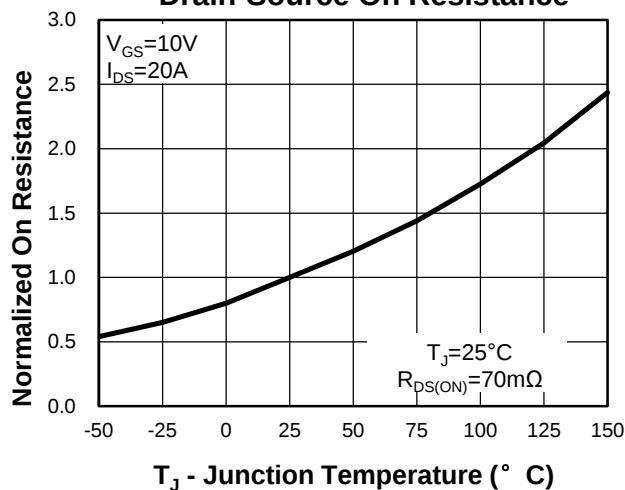
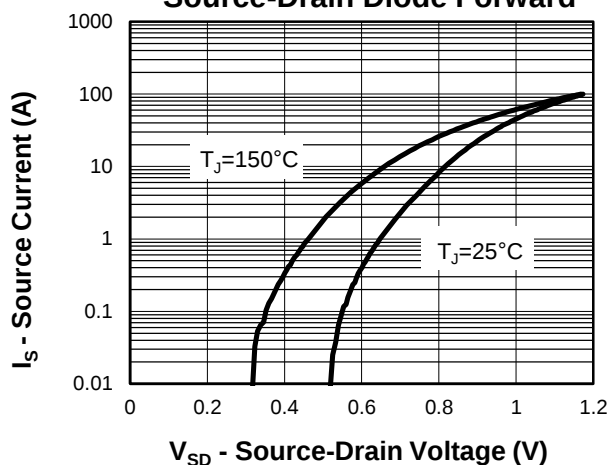
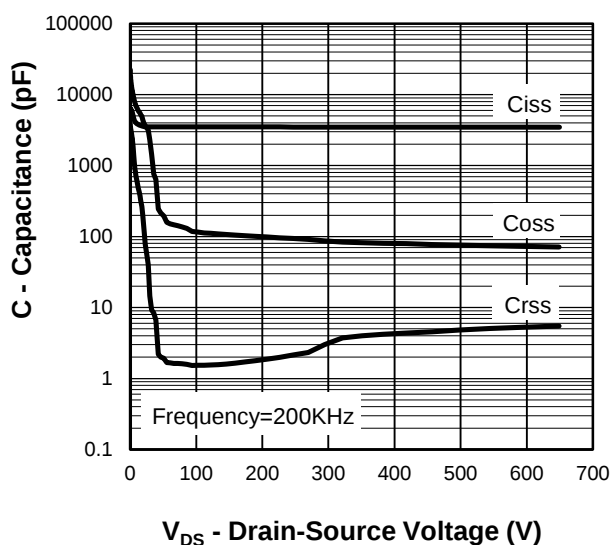
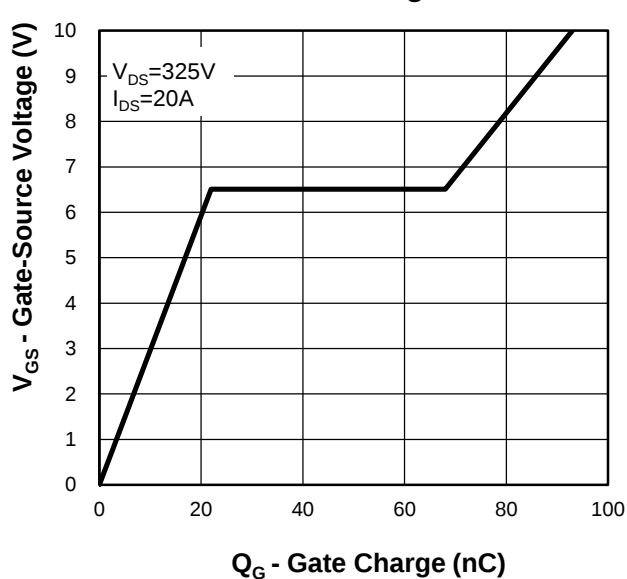
2nd Line: Part Number(65R080F)

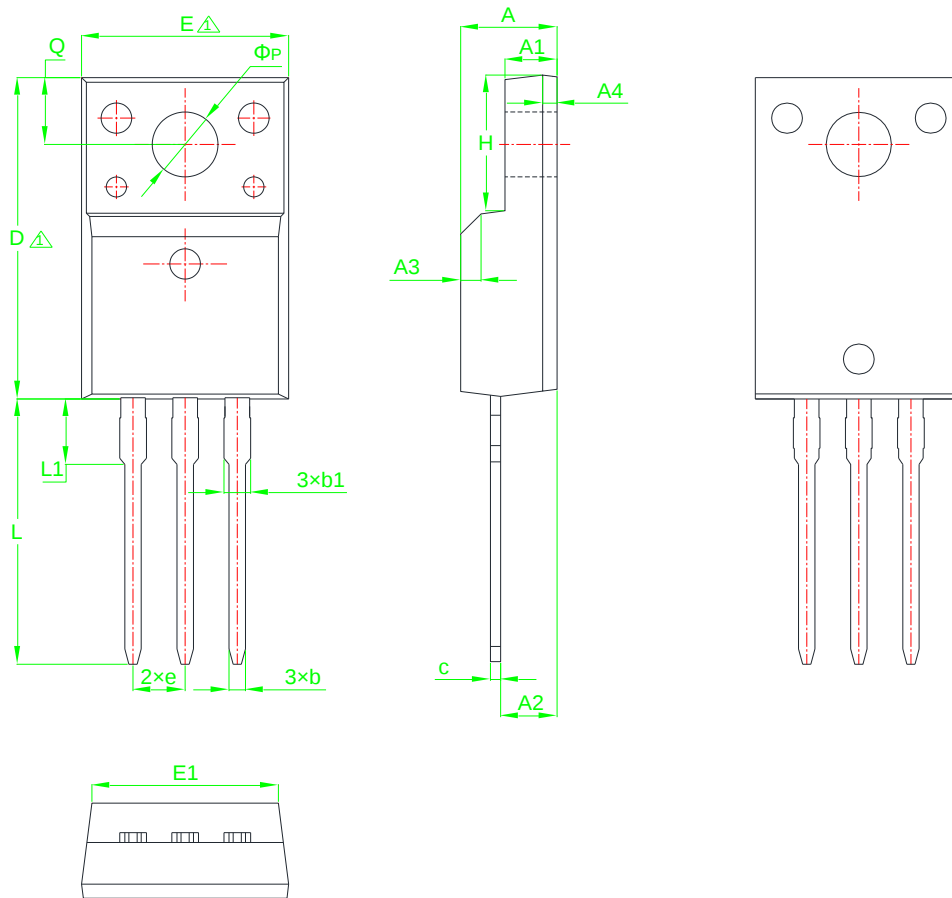
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



Typical Characteristics

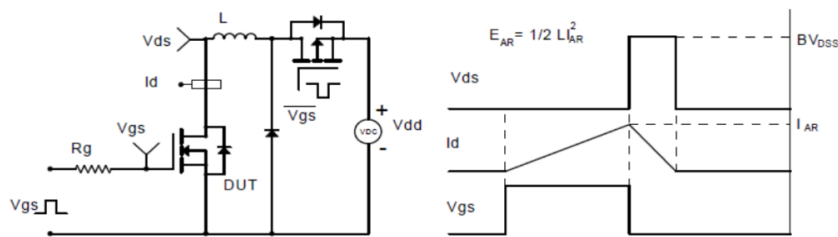
Output Characteristics

Drain-Source On Resistance

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Package Information
TO-220F


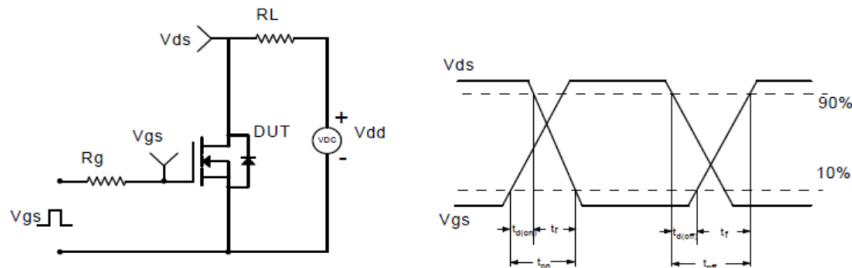
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.50	4.70	4.90	0.177	0.185	0.193	E	9.96	10.16	10.36	0.392	0.400	0.408
A1	2.34	2.54	2.74	0.092	0.100	0.108	E1	9.25	9.45	9.65	0.364	0.372	0.380
A2	2.55	2.75	2.95	0.100	0.108	0.116	e	2.54BSC			0.100BSC		
A3	1.00×45° REF			0.039×45° REF			H	6.20	*	6.90	0.244	*	0.272
A4	0.70REF			0.028REF			L	12.90	13.10	13.30	0.508	0.516	0.524
b	0.70	0.80	0.90	0.028	0.031	0.035	L1	3.15	3.30	3.45	0.124	0.130	0.136
b1	1.10	1.20	1.35	0.043	0.047	0.053	Q	3.20	3.30	3.40	0.126	0.130	0.134
c	0.35	0.50	0.65	0.014	0.020	0.026	ØP	3.08	3.18	3.28	0.121	0.125	0.129
D	15.70	15.90	16.10	0.618	0.626	0.634							

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

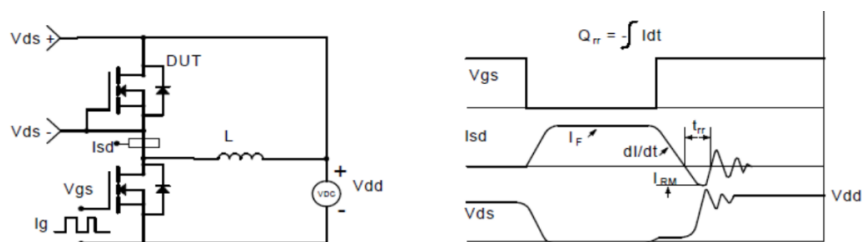
Avalanche Test Circuit and Waveforms



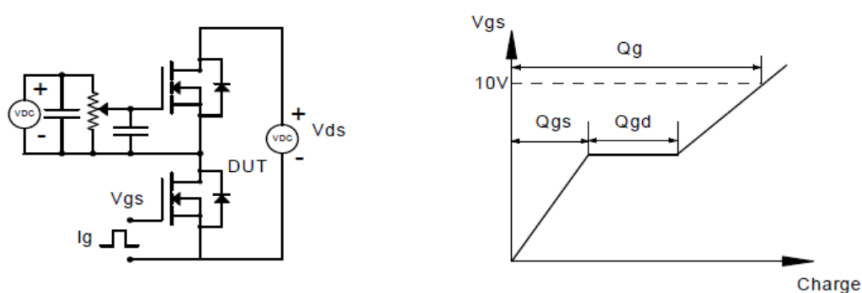
Switching Time Test Circuit and Waveforms



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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