

Features

- -60V/-88A,
 $R_{DS(ON)} = 7.5m\Omega(Typ.)@V_{GS} = -10V$
 $R_{DS(ON)} = 10m\Omega(Typ.)@V_{GS} = -4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- Fast Switching Speed
- 100% avalanche tested

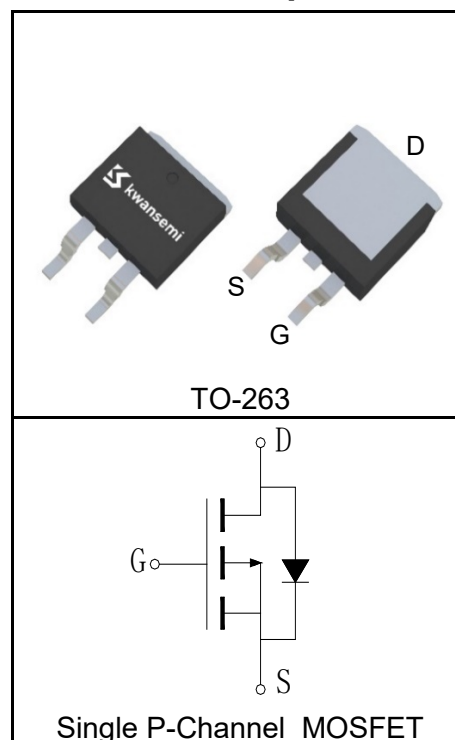
Applications

- 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		-60	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	-88	A
Mounted on Large Heat Sink				
I _{DP} ^①	Pulse Drain Current	T _C =25°C	-352	A
I _D ^②	Continuous Drain Current(V _{GS} =-10V)	T _C =25°C	-88	A
		T _C =100°C	-62	
P _D	Maximum Power Dissipation	T _C =25°C	136	W
		T _C =100°C	68	
R _{θJC}	Thermal Resistance-Junction to Case		1.1	°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		506	mJ

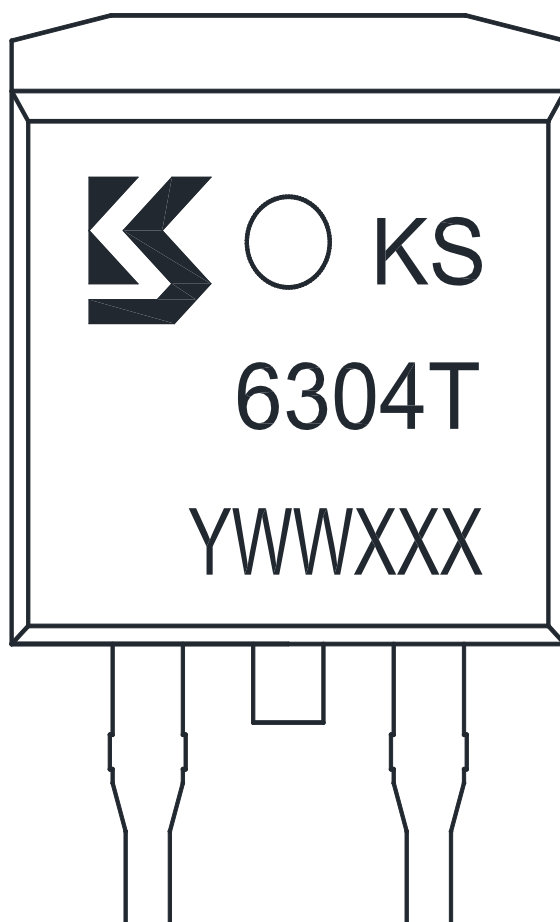
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-60V, 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	-1.8	-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		7.5	9.5	mΩ
		V _{GS} =-4.5V, I _{DS} =-15A		10	13	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =-20A, V _{GS} =0V		-0.85	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20A, dI _{SD} /dt=-100A/μs		35		ns
Q _{rr}	Reverse Recovery Charge			78		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} =-30V, Frequency=200KHz		3280		pF
C _{oss}	Output Capacitance			635		
C _{rSS}	Reverse Transfer Capacitance			35		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, I _{DS} =-20A, V _{GEN} =-10V, R _G =3Ω		19		ns
t _r	Turn-on Rise Time			37		
t _{d(OFF)}	Turn-off Delay Time			58		
t _f	Turn-off Fall Time			23		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-20A		54		nC
Q _{gs}	Gate-Source Charge			11		
Q _{gd}	Gate-Drain Charge			13		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is -75A.
 - 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 $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = -45A$, $L=0.5\text{mH}$, $V_{DD} = -48V$, $R_G = 25\Omega$, $V_{GS} = -10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = -32A$, $L=0.5\text{mH}$.
 - 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
KS6304GAT	TO-263	Tape&Reel	800	13"	24mm

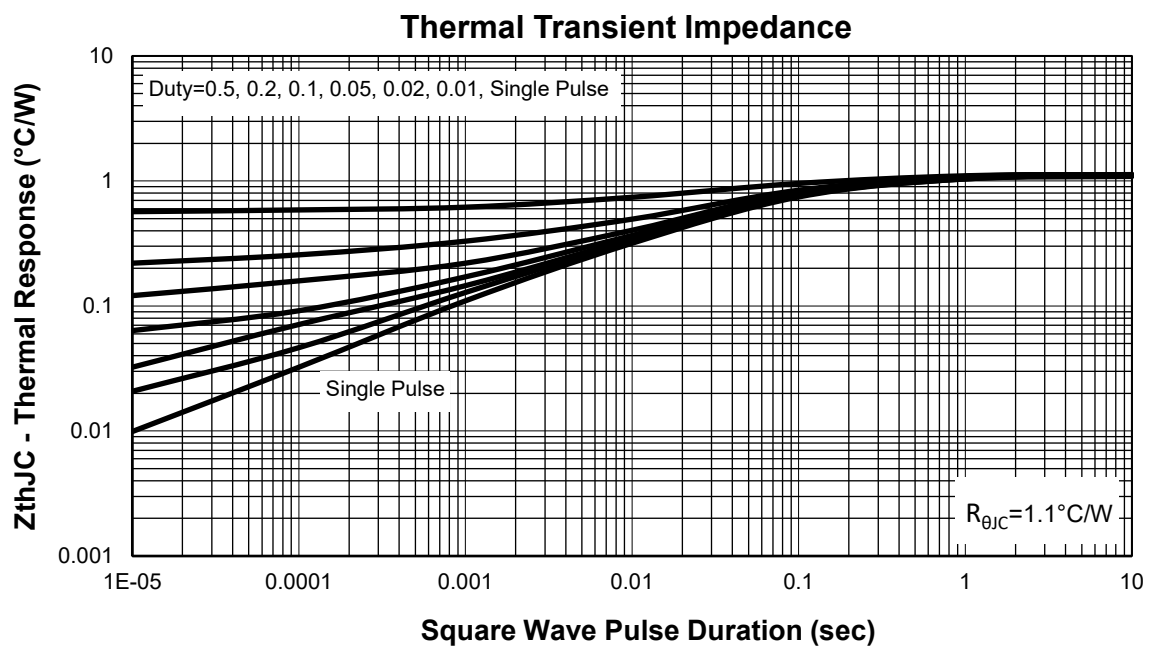
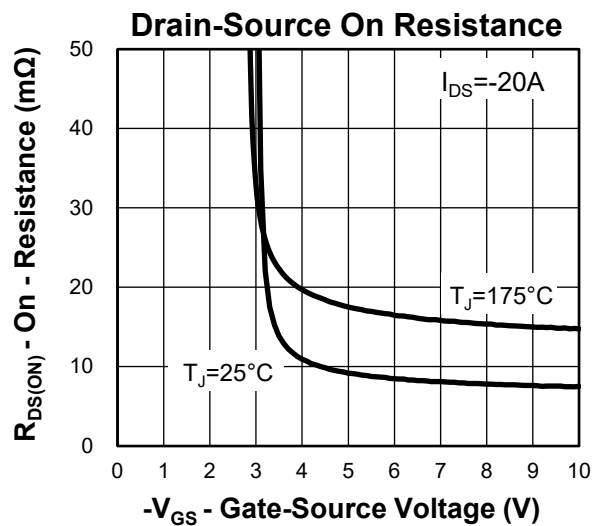
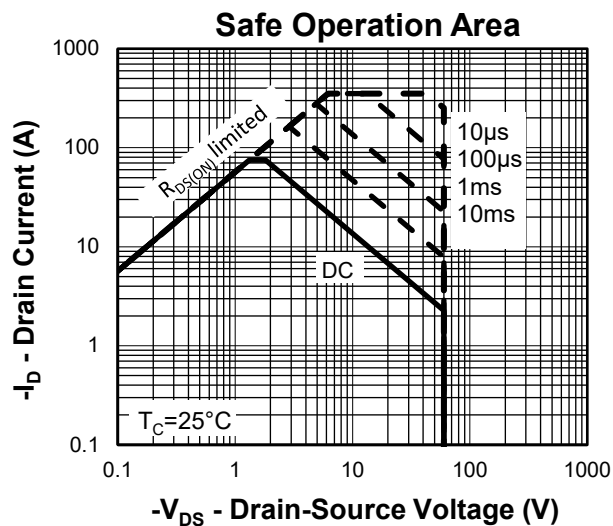
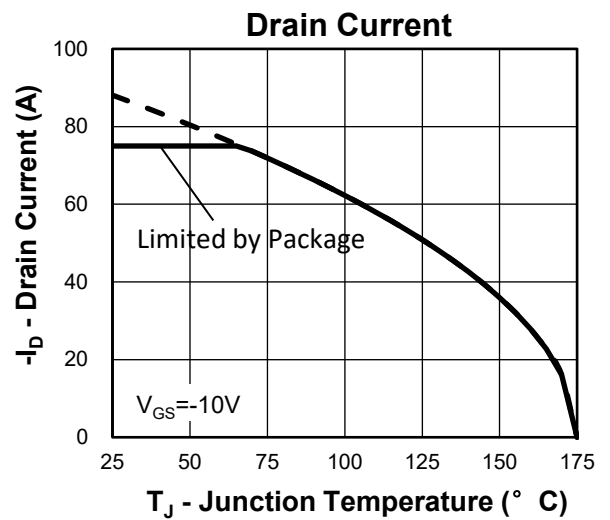
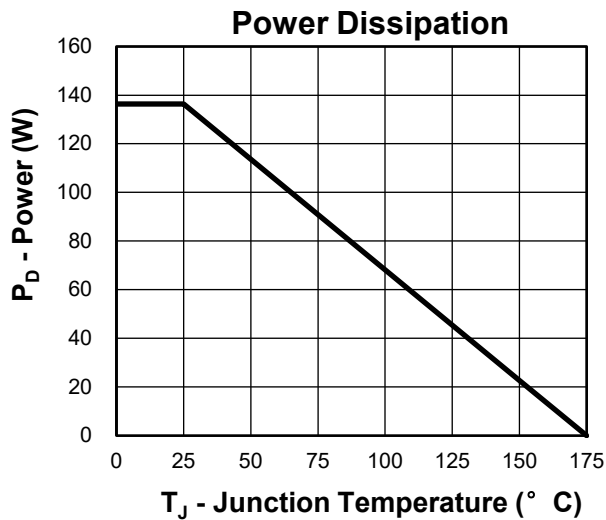


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

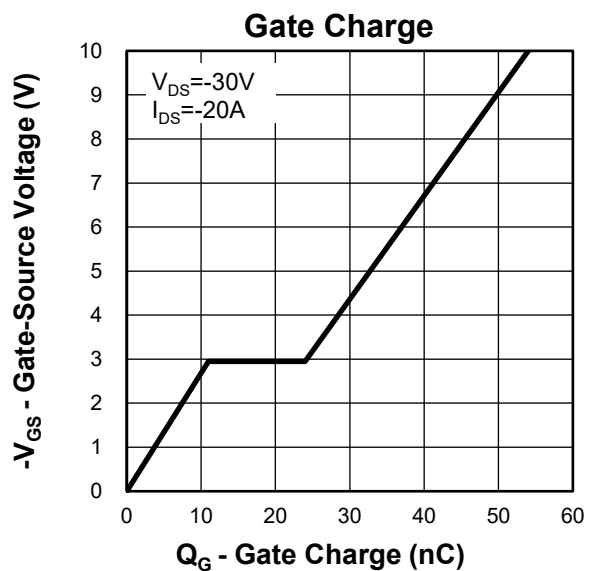
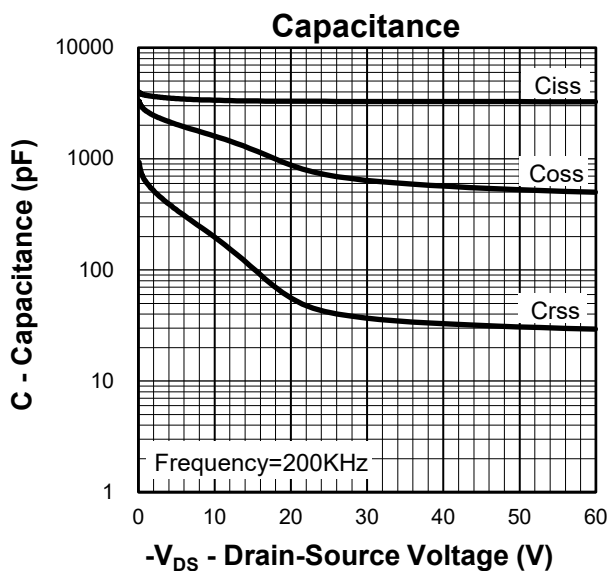
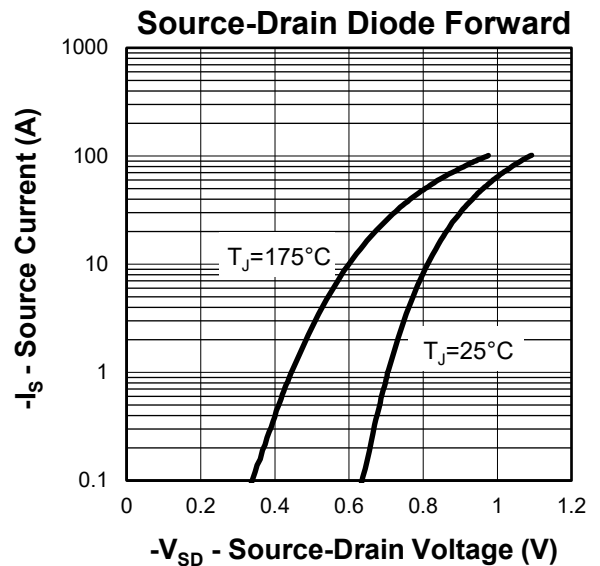
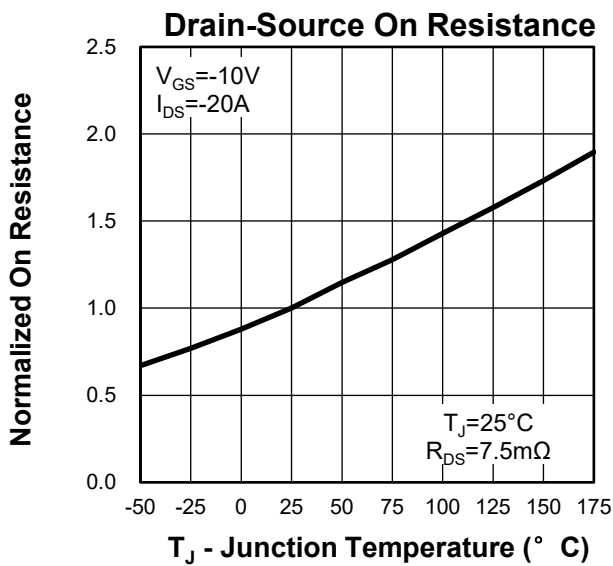
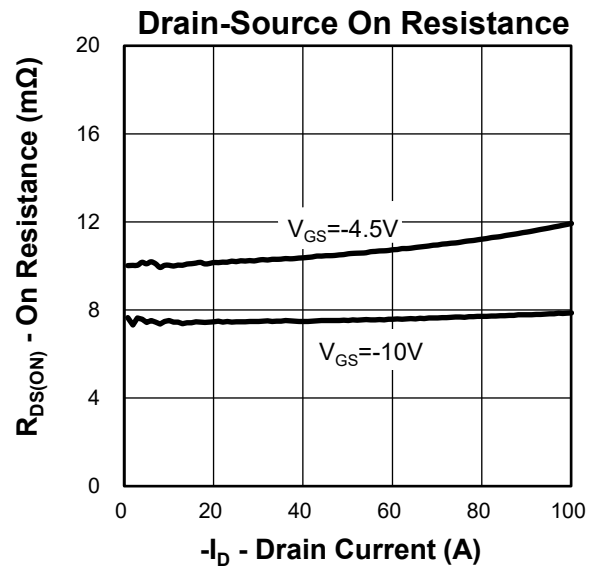
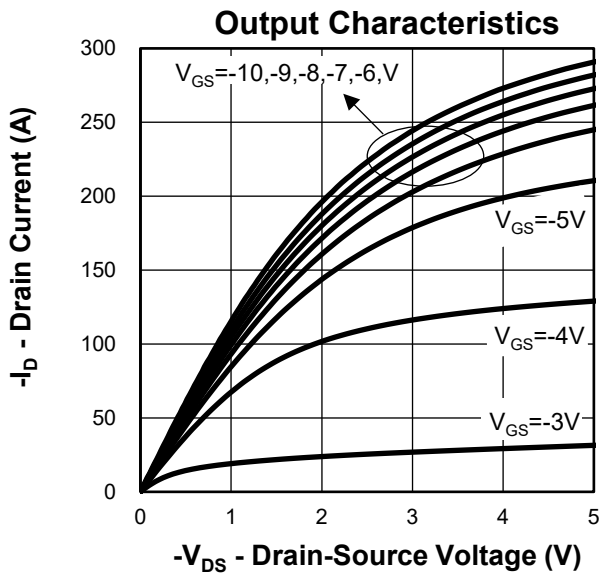
2nd Line: Part Number(6304T)

3rd Line: Lot Number(YWWXXX)

Typical Characteristics

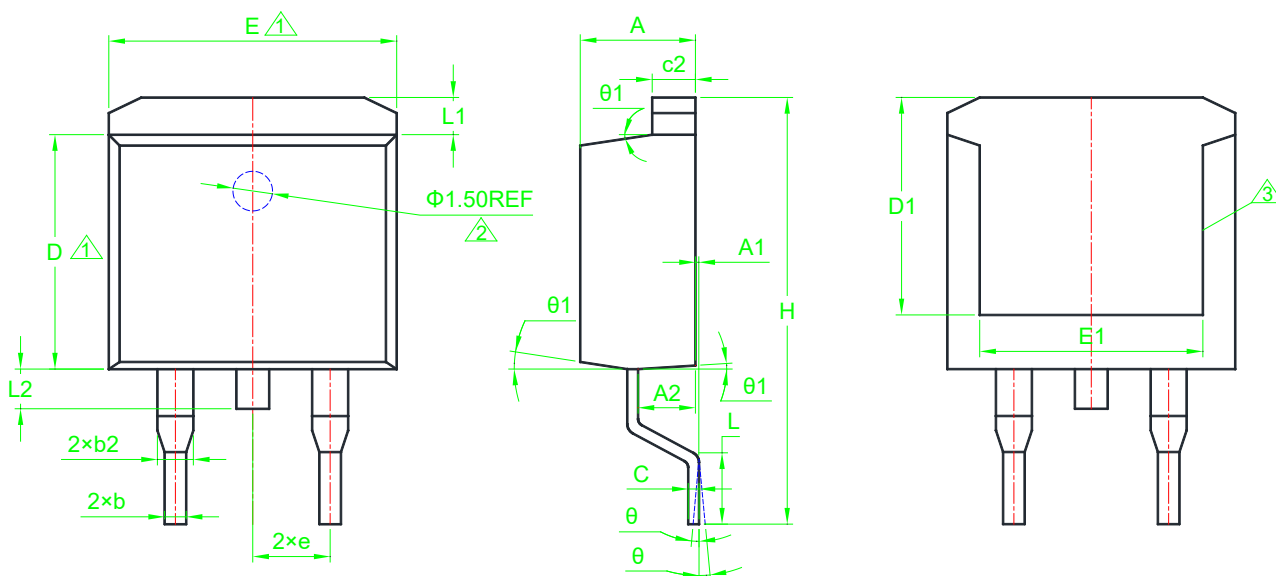


Typical Characteristics



Package Information

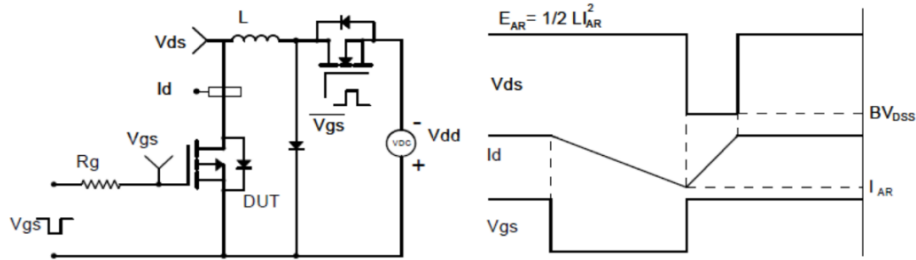
TO-263



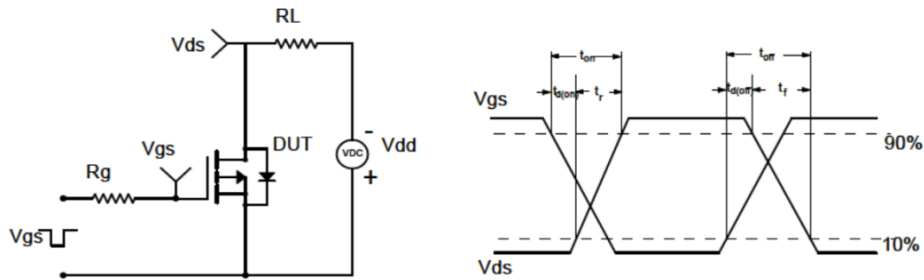
SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.50	4.80	0.169	0.177	0.189	e	2.54BSC			0.100BSC		
A1	0.00	0.10	0.25	0.000	0.004	0.010	E	9.90	10.10	10.30	0.390	0.398	0.406
A2	2.20	*	2.80	0.087	*	0.110	E1	7.00	*	8.50	0.276	*	0.335
b	0.70	0.85	0.95	0.028	0.033	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	θ1	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.

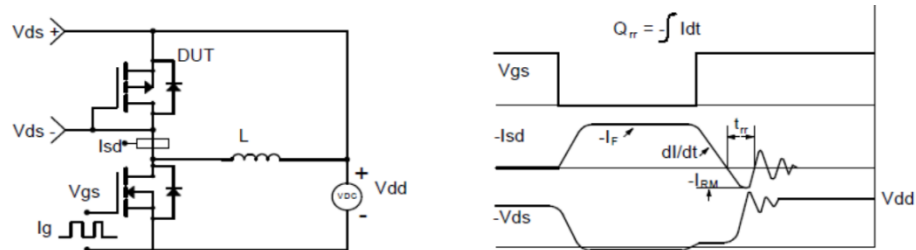
Avalanche Test Circuit and Waveforms



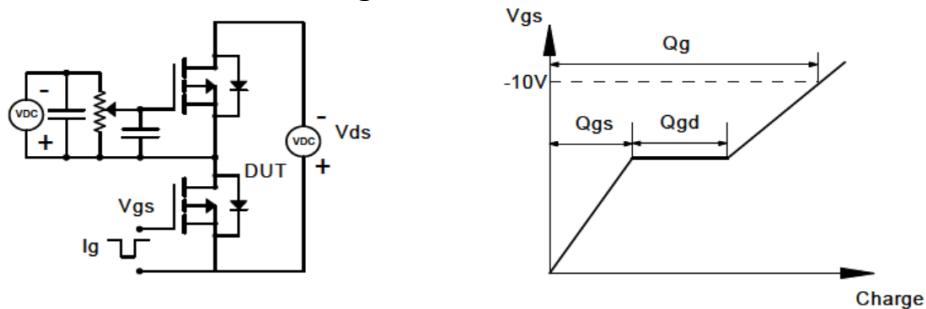
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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