

Features

- -40V/-9A,
 $R_{DS(ON)} = 20m\Omega(Typ.)@V_{GS} = -10V$
 $R_{DS(ON)} = 24m\Omega(Typ.)@V_{GS} = -4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

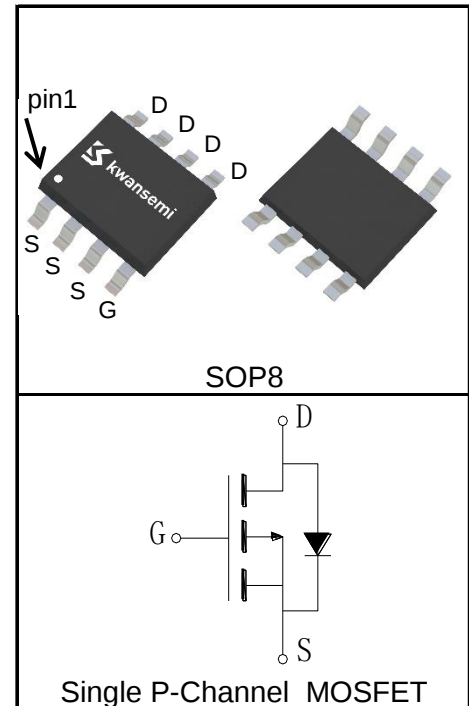
Applications

- Load Switch
- DC-DC Converter
- Power Management



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-40	V
V _{GSS}	Gate-Source Voltage		±20	
T _{Jmax}	Maximum Junction Temperature		150	°C
T _J ,T _{STG}	Operating and Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	-2.6	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _A =25°C	-36	A
I _D ^②	Continuous Drain Current(V _{GS} =-10V)	T _A =25°C	-9	A
		T _A =70°C	-7.2	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJL}	Thermal Resistance-Junction to Lead		35	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		50	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		100	mJ

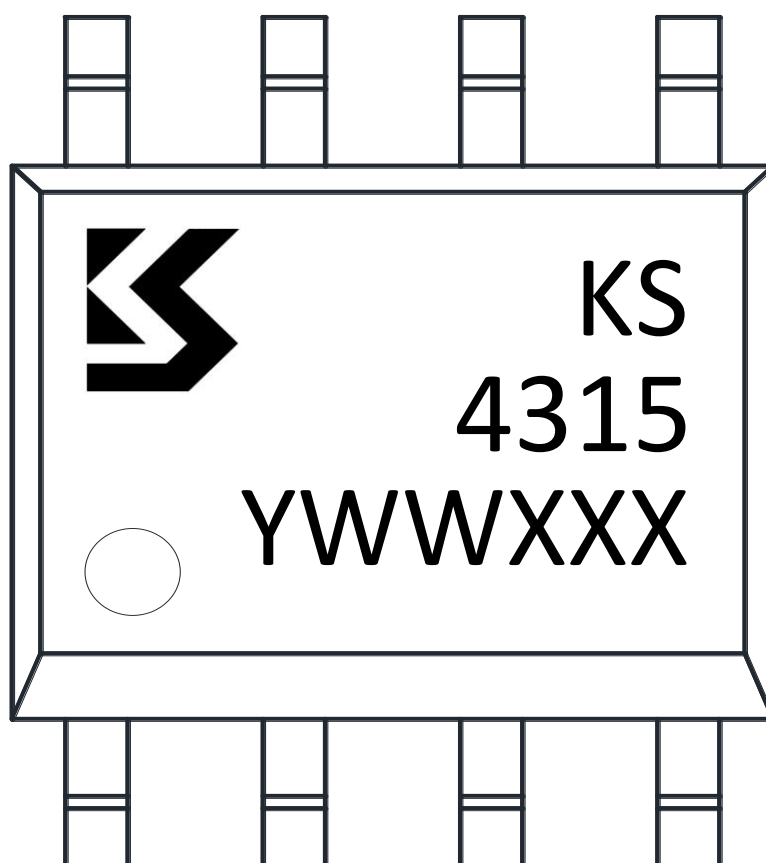
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS4315HA			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	-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} =-7A		20	25	mΩ
		V _{GS} =-4.5V, I _{DS} =-5A		24	33	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =-7A, V _{GS} =0V		-0.85	-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-7A, dI _{SD} /dt=-100A/μs		30		ns
Q _{rr}	Reverse Recovery Charge			24		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		7		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz		1925		pF
C _{oss}	Output Capacitance			120		
C _{rss}	Reverse Transfer Capacitance			115		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-20V, I _{DS} =-7A, V _{GEN} =-10V, R _G =6Ω		10		ns
t _r	Turn-on Rise Time			19		
t _{d(OFF)}	Turn-off Delay Time			40		
t _f	Turn-off Fall Time			13		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-7A		26		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			7		

- 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 $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = -20A$, $L=0.5\text{mH}$, $V_{DD} = -20V$, $R_G = 25\Omega$, $V_{GS} = -10V$. Part not recommended for use above this value.
 - 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
KS4315HA	SOP8	Tape&Reel	3000	13"	12mm

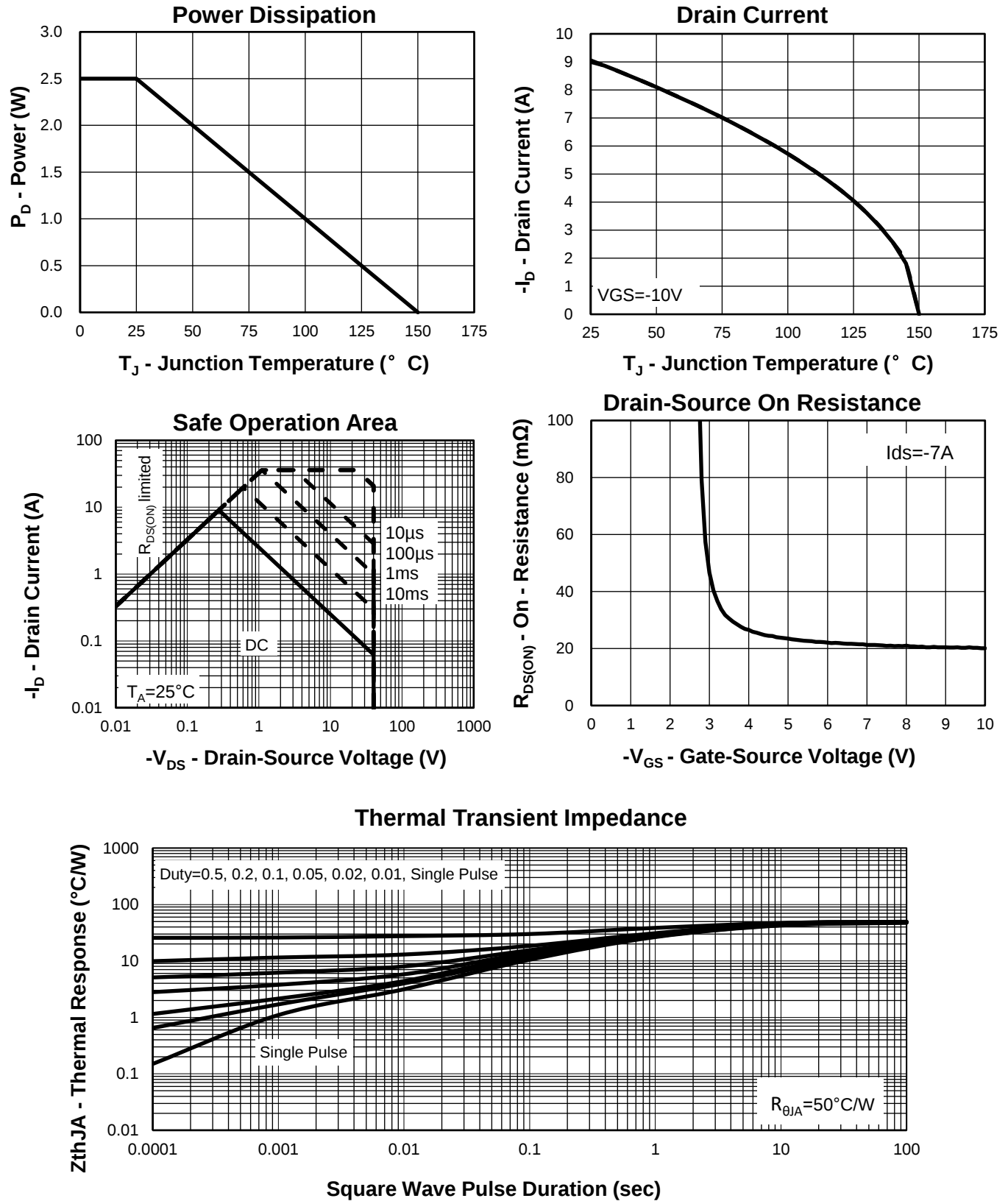


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

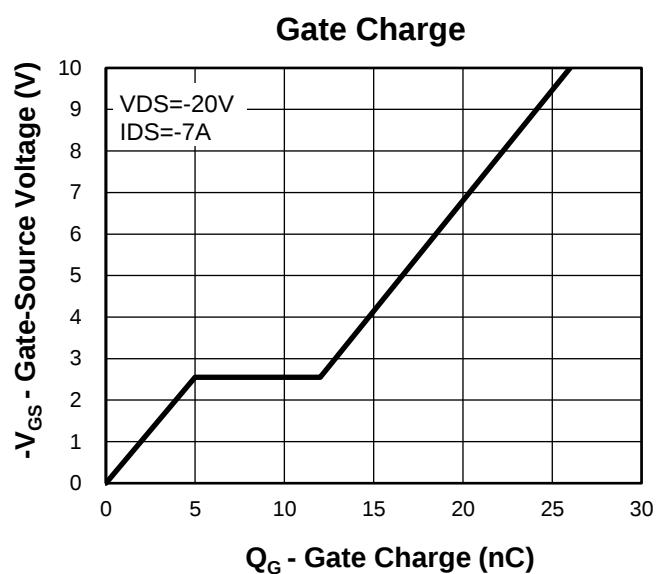
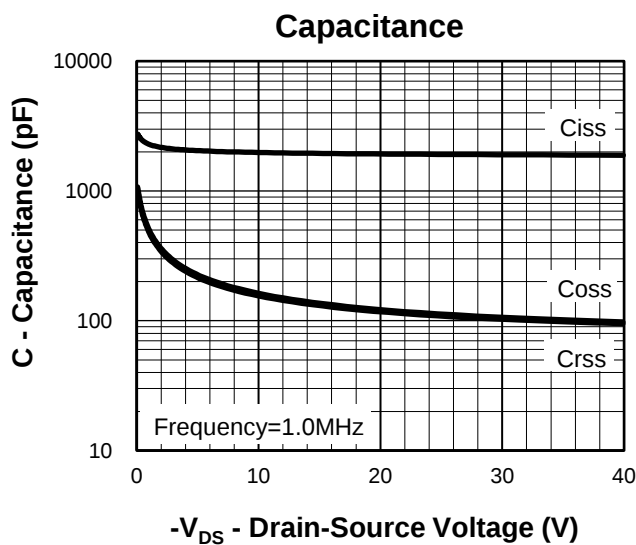
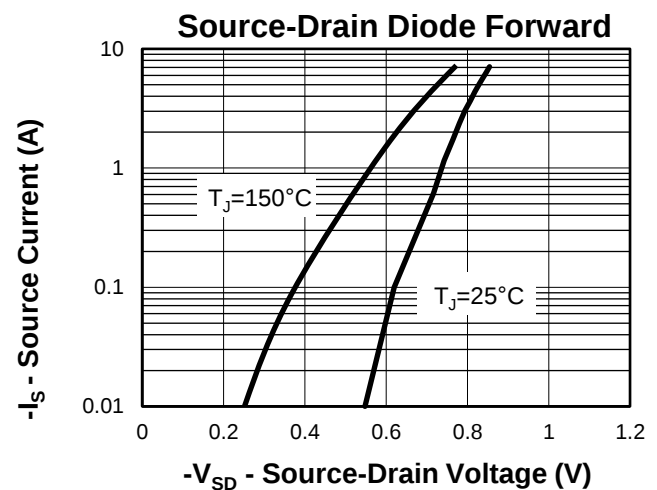
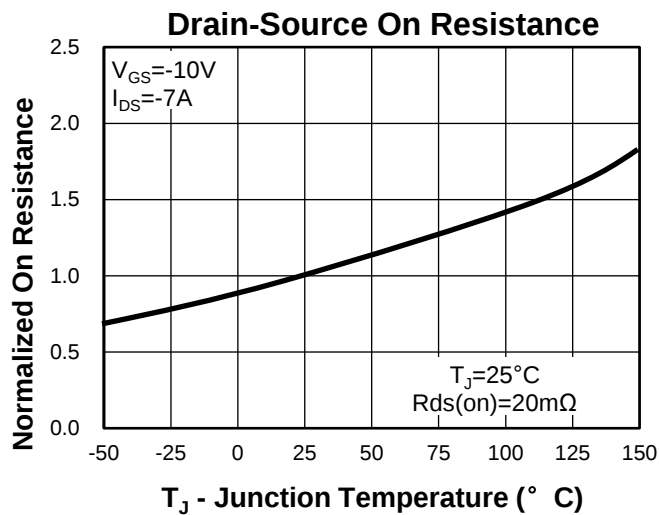
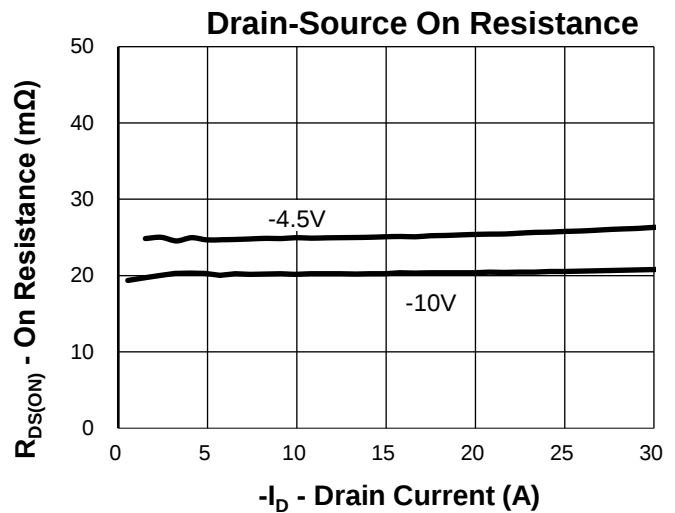
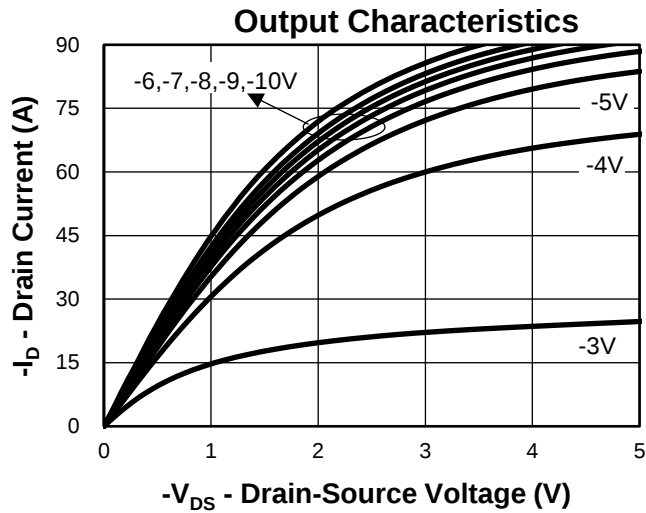
2nd Line: Part Number(4315)

3rd Line: Lot Number(YWWXXX)

Typical Characteristics

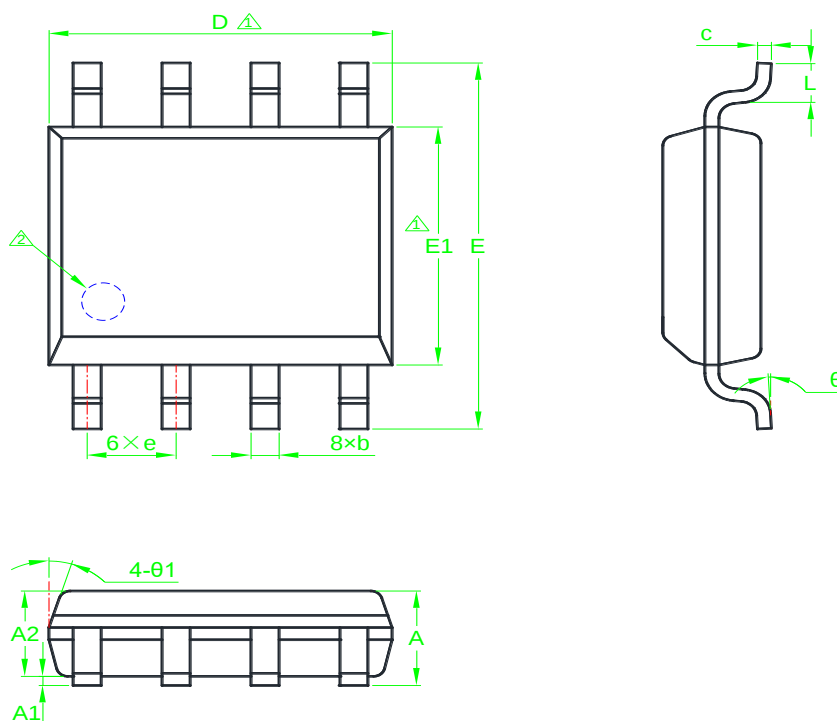


Typical Characteristics



Package Information

SOP8

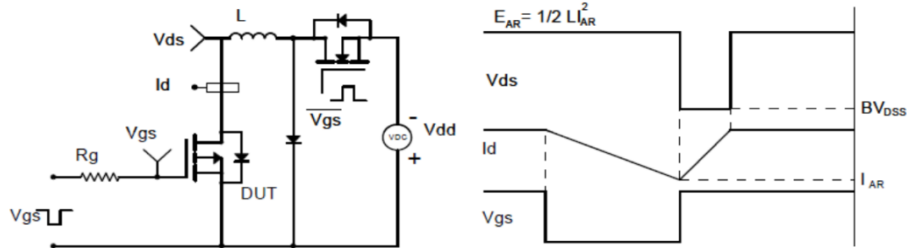


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	*	1.75	0.053	*	0.069
A1	0.10	*	0.25	0.004	*	0.010
A2	1.25	1.45	1.65	0.049	0.057	0.065
b	0.33	*	0.51	0.013	*	0.020
c	0.15	*	0.25	0.006	*	0.010
D	4.70	4.90	5.10	0.185	0.193	0.201
E	5.80	6.00	6.30	0.228	0.236	0.248
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27BSC			0.050BSC		
L	0.40	*	1.27	0.016	*	0.050
θ	0°	*	8°	0°	*	8°
θ 1	5°	*	15°	5°	*	15°

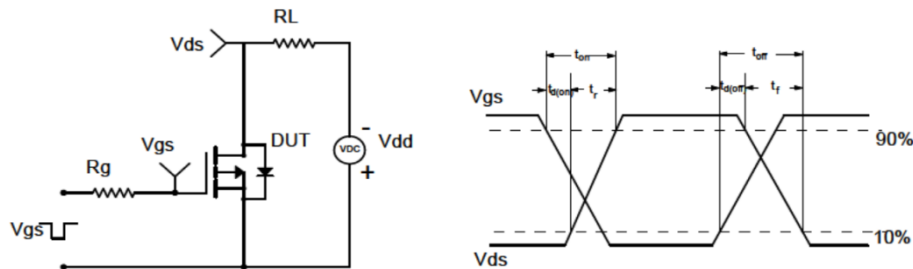
① Dimensions D and E1 do not include mold flash protrusions or gate burrs.

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

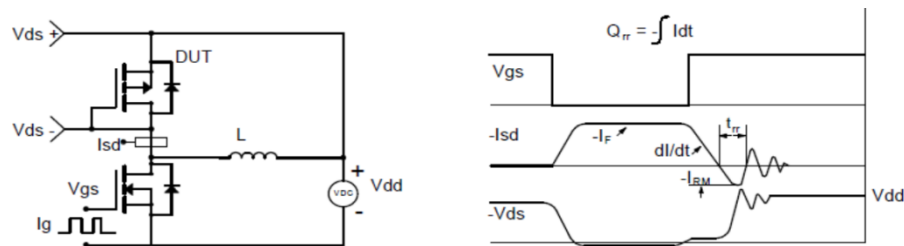
Avalanche Test Circuit and Waveforms



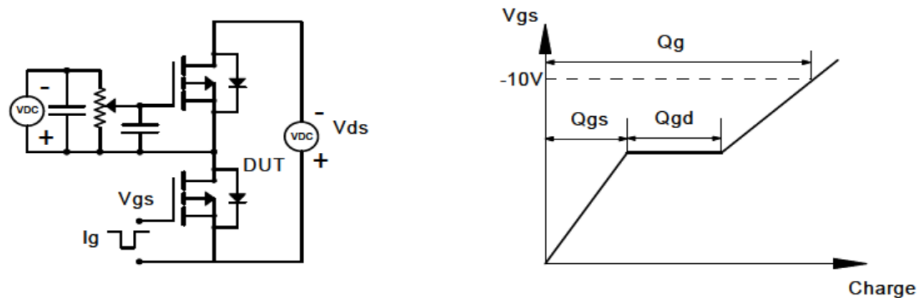
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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