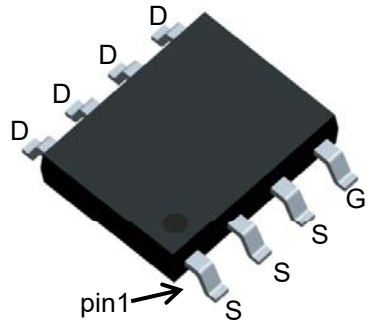
KS2222HA

N-Channel Advanced Power MOSFET

Features

- 20V/12A,
  $R_{DS\ (ON)}$ =7.5mΩ(Typ.)@V_{GS}=10V
  $R_{DS\ (ON)}$ =8mΩ(Typ.)@V_{GS}=4.5V
  $R_{DS\ (ON)}$ =10mΩ(Typ.)@V_{GS}=2.5V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

Pin Description



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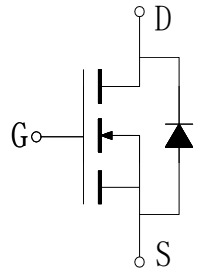


N-Channel MOSFET

Applications

- Power Management
- Battery Protection

RoHS Pb HF Halogen-Free

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	2.9	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_A=25°C	48	A
I_D ②	Continuous Drain Current(V_{GS}=4.5V)	T_A=25°C	12	A
		T_A=70°C	9.6	
P_D	Maximum Power Dissipation	T_A=25°C	2.5	W
		T_A=70°C	1.6	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		50	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		45	mJ

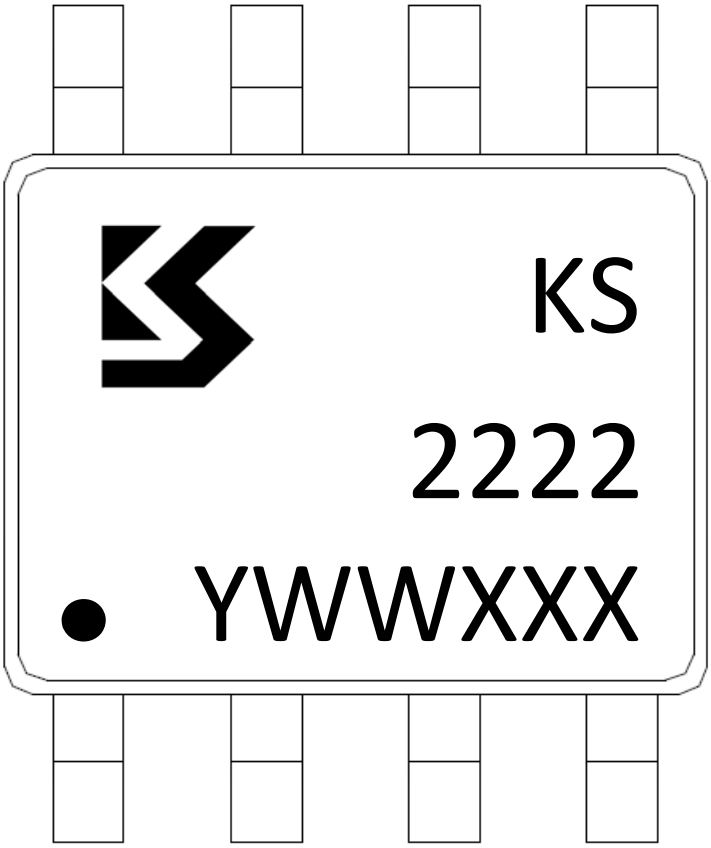
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS2222HA			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.4	0.7	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=10A		7.5	9	mΩ
		V_{GS}=4.5V, I_{DS}=8A		8	11	mΩ
		V_{GS}=2.5V, I_{DS}=4A		10	15	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V		0.85	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=10A, dI_{SD}/dt=100A/μs		13		ns
Q_{rr}	Reverse Recovery Charge			17		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}=10V, Frequency=1.0MHz		1290		pF
C_{oss}	Output Capacitance			200		
C_{rss}	Reverse Transfer Capacitance			180		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, I_{DS}=10A, V_{GEN}=4.5V,R_G=3Ω		3.1		ns
t_r	Turn-on Rise Time			4.6		
$t_{d(OFF)}$	Turn-off Delay Time			9		
t_f	Turn-off Fall Time			9.4		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=10A		18		nC
Q_{gs}	Gate-Source Charge			7.5		
Q_{gd}	Gate-Drain Charge			8.5		

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, L = 0.1mH,R_G = 25Ω, I_{AS} = 30A, V_{GS} =10V.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

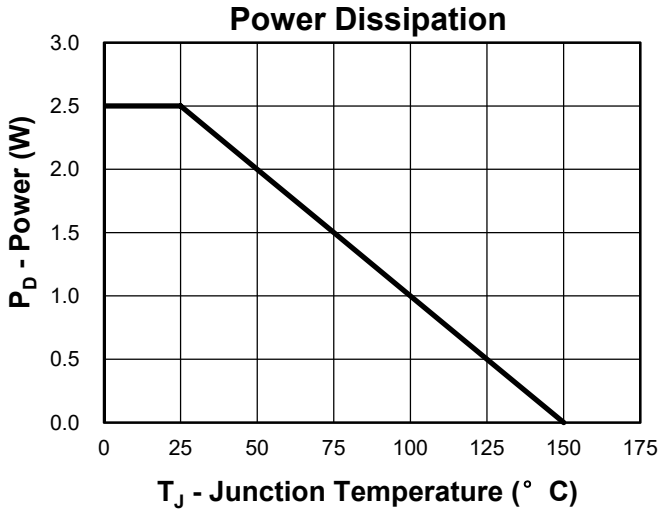
Ordering and Marking Information

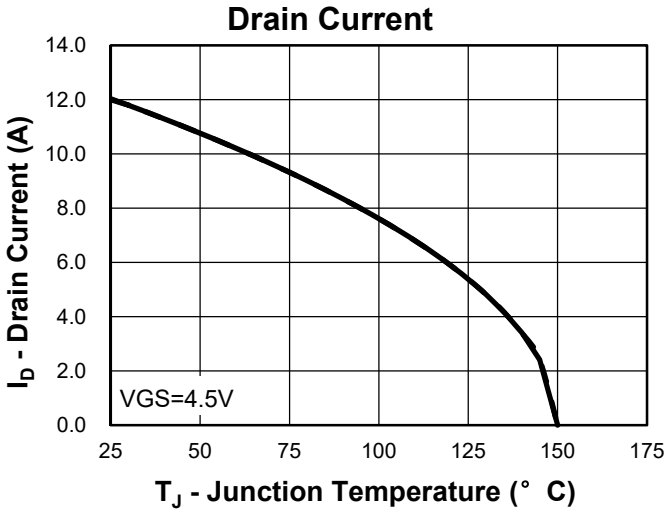
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS2222HA	SOP8	Tape&Reel	3000	13”	12mm

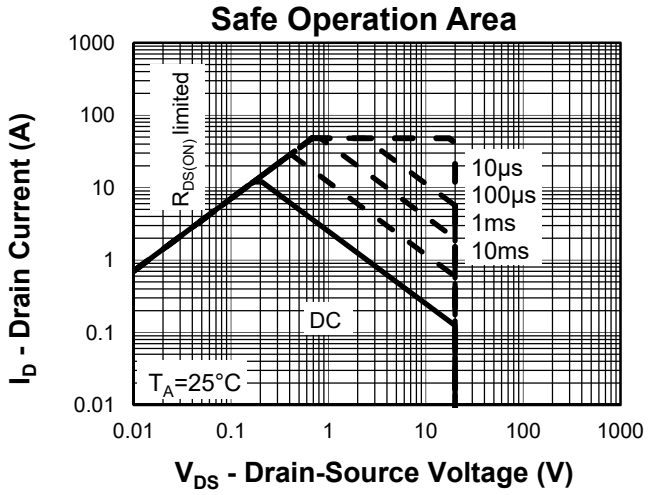


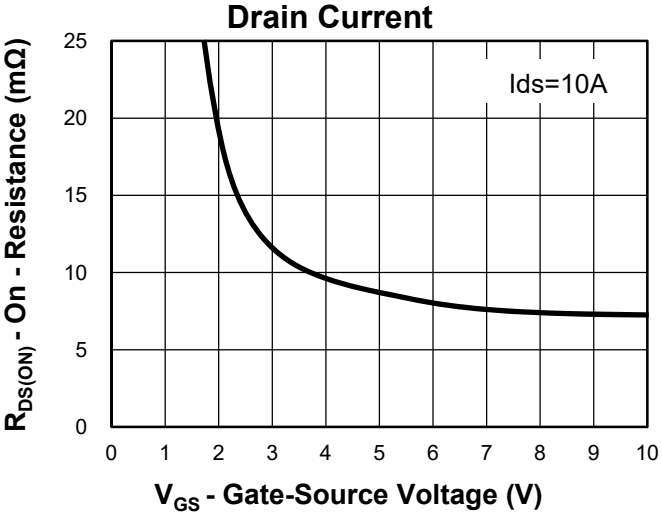
Y =Year,2017-A,2018-B,etc.
WW =Week.
XXX =Lot number.

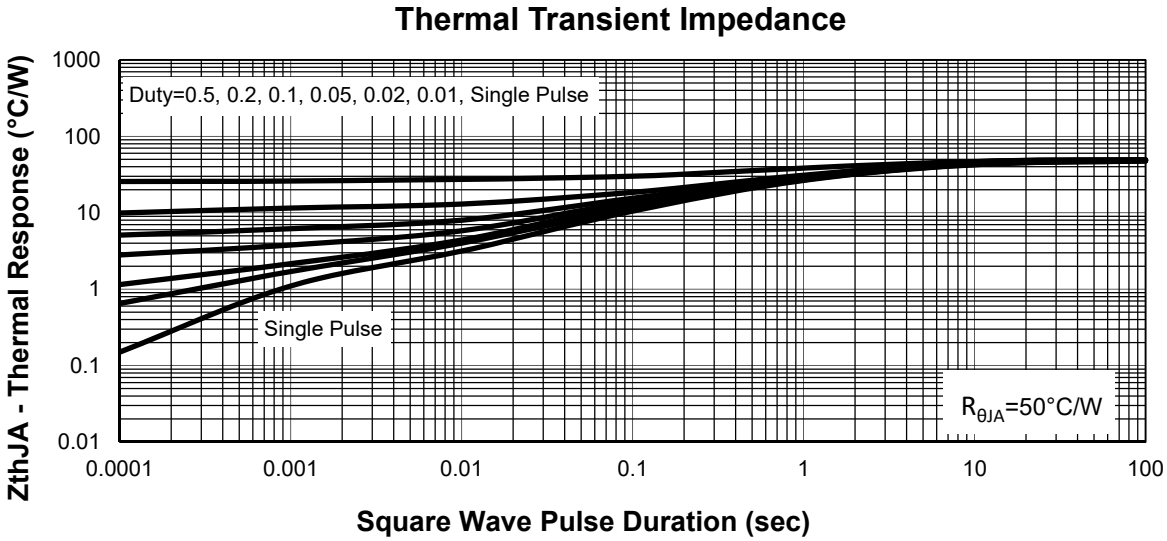
Typical Characteristics











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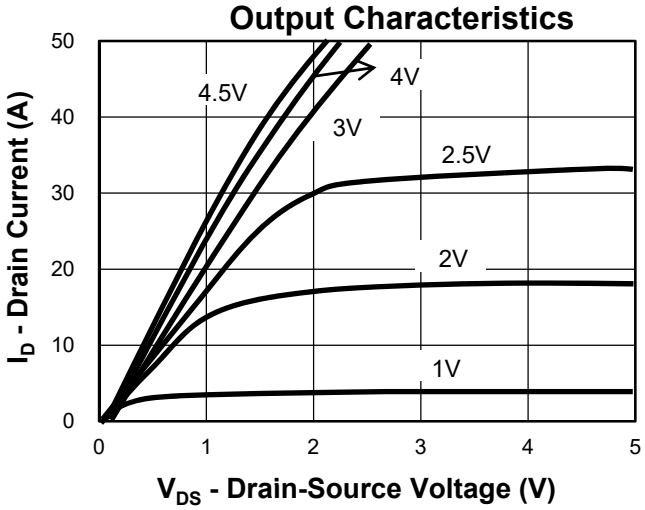
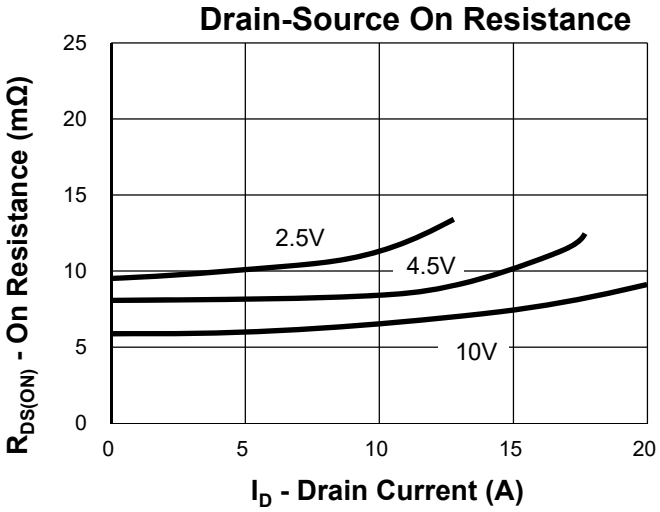
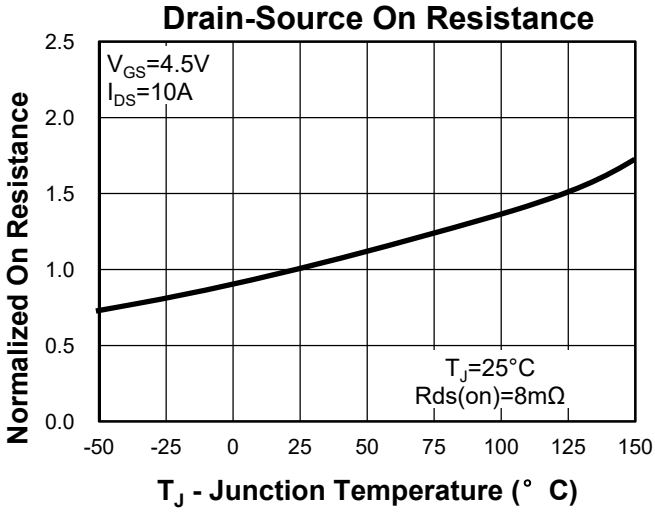
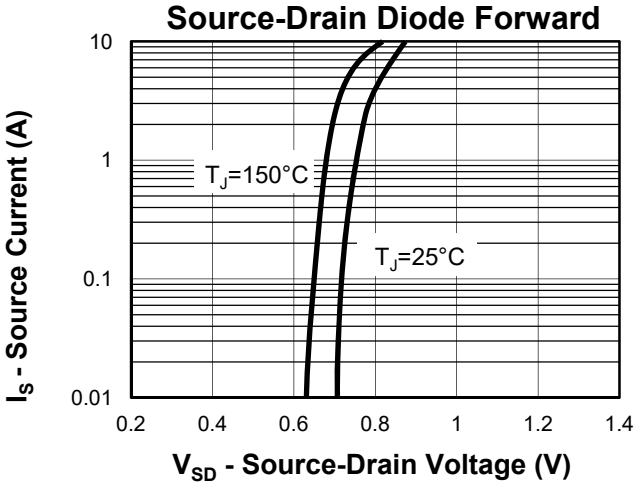
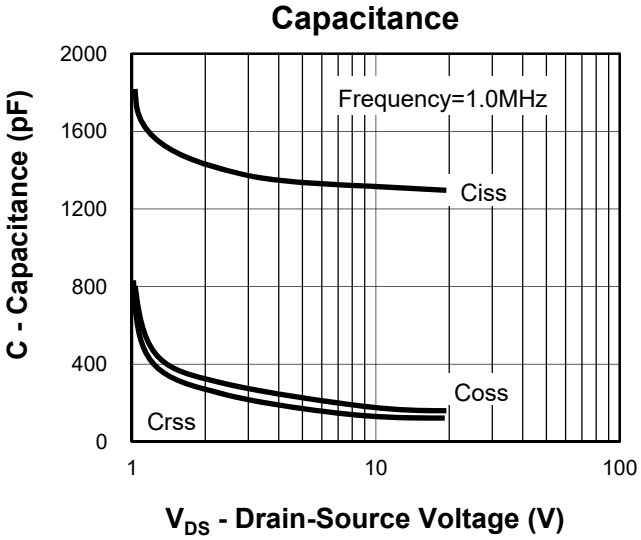
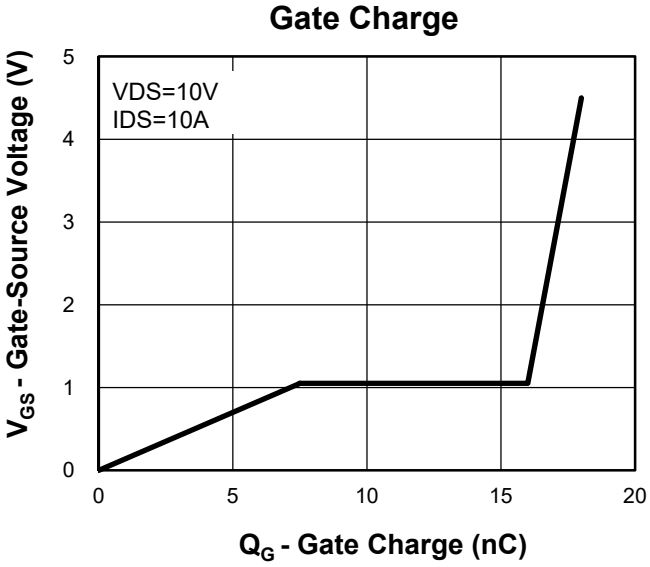






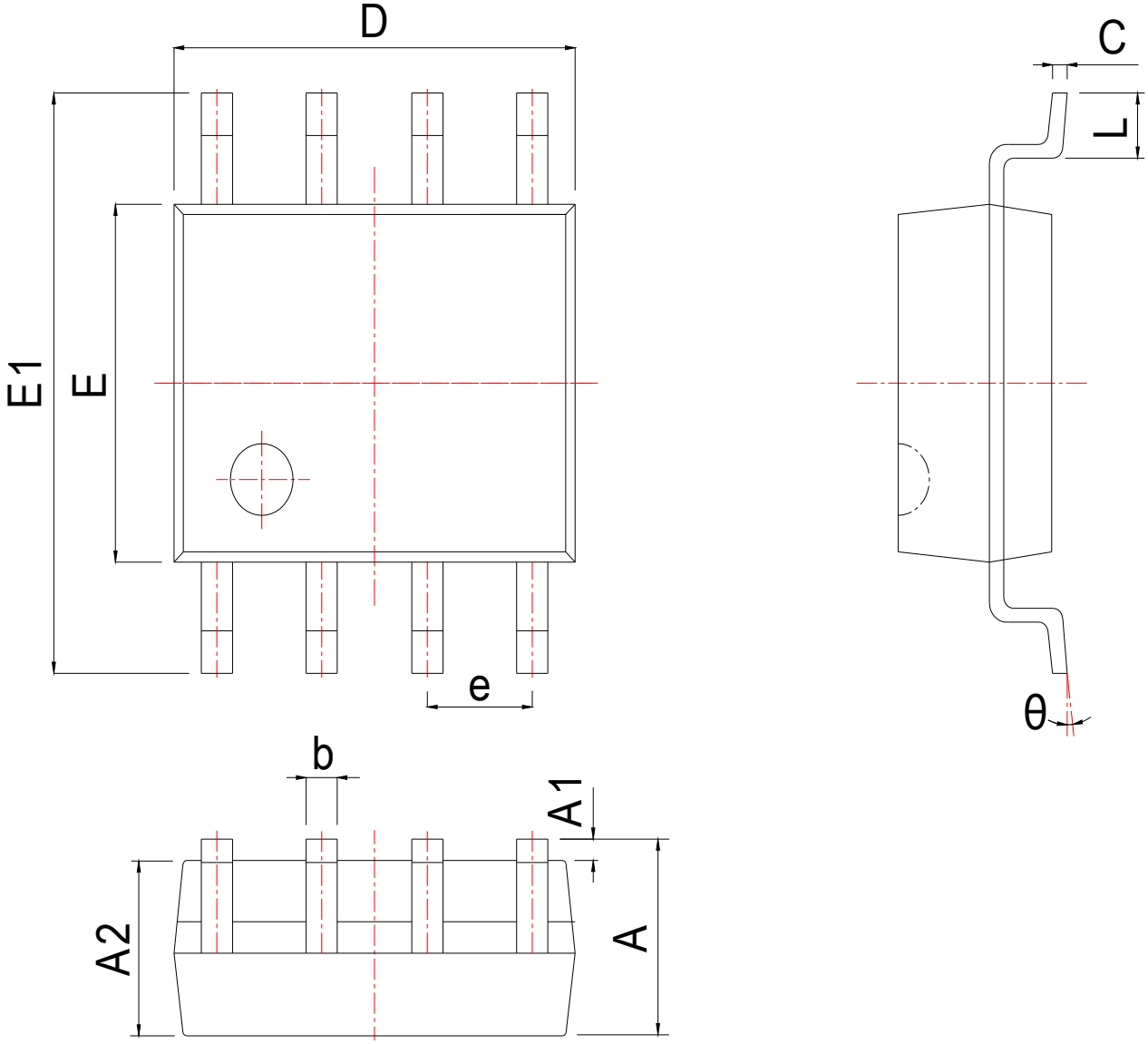






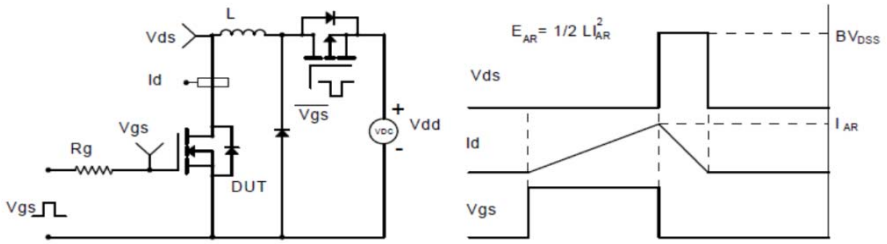
Package Information

SOP8

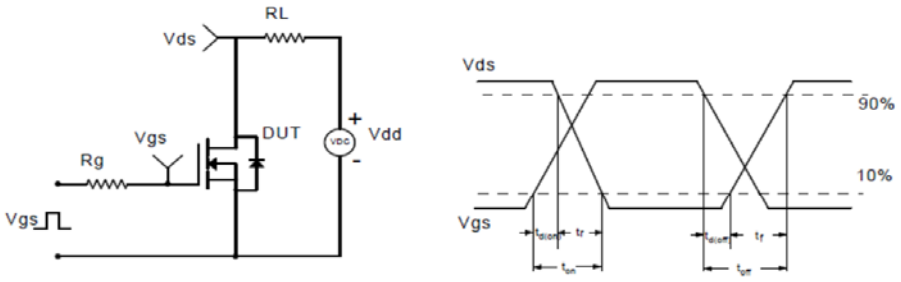


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.300	1.525	1.750	0.051	0.060	0.069
A1	0.050	0.150	0.250	0.002	0.006	0.010
A2	1.350	1.450	1.550	0.053	0.057	0.061
b	0.330	0.420	0.510	0.013	0.017	0.020
c	0.170	0.210	0.250	0.007	0.008	0.010
D	4.700	4.900	5.100	0.185	0.193	0.201
E	3.800	3.900	4.000	0.150	0.154	0.157
E1	5.800	6.000	6.200	0.228	0.236	0.244
e	1.270 BSC			0.050 BSC		
L	0.400	0.835	1.270	0.016	0.033	0.050
θ	0°		8°	0°		8°

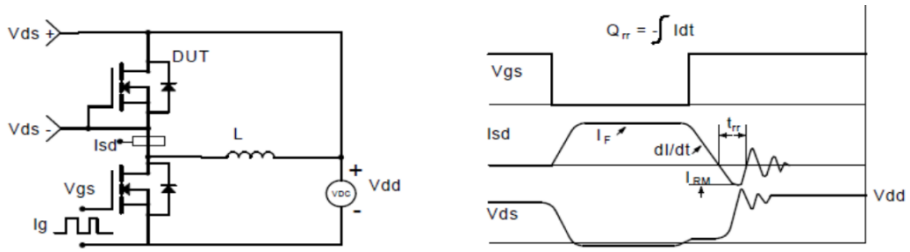
Avalanche Test Circuit and Waveforms



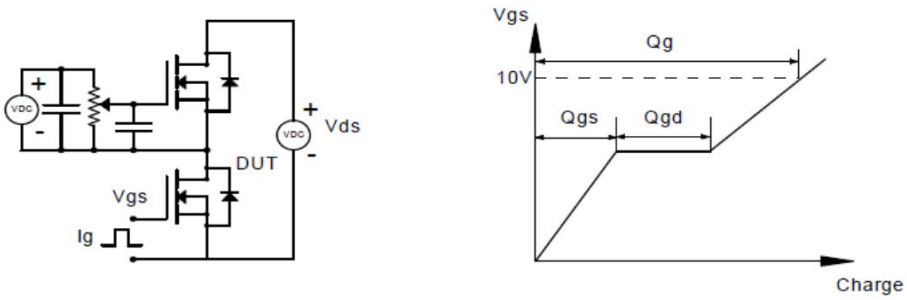
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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