

Features

- 60V/10A,
 $R_{DS(ON)} = 12m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 15m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- Fast Switching Speed
- Low Capacitance to Minimize Driver Losses

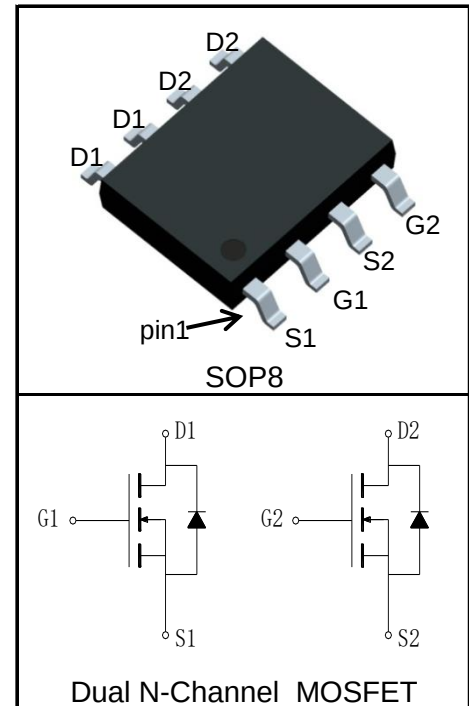
Applications

- Power Management
- Load Switch



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		60	V
V _{GSS}	Gate-Source Voltage		±20	
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	2.4	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _A =25°C	40	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _A =25°C	10	A
		T _A =70°C	8	
P _D	Maximum Power Dissipation	T _A =25°C	2	W
		T _A =70°C	1.3	
R _{θJL}	Thermal Resistance-Junction to Lead		40	°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		49	mJ

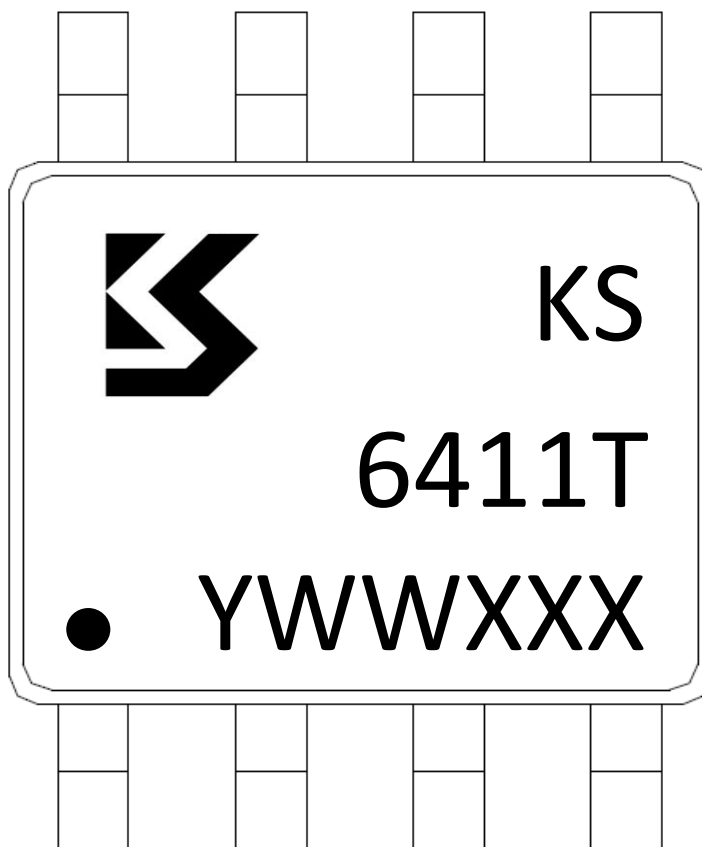
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS6411HAT			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} =8A		12	14	mΩ
		V _{GS} =4.5V, I _{DS} =6A		15	20	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =8A, V _{GS} =0V		0.84	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =8A, dI _{SD} /dt=100A/μs		18		ns
Q _{rr}	Reverse Recovery Charge			31		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz		1360		pF
C _{oss}	Output Capacitance			515		
C _{rss}	Reverse Transfer Capacitance			30		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, I _{DS} =8A, V _{GEN} =10V, R _G =6Ω		9		ns
t _r	Turn-on Rise Time			15		
t _{d(OFF)}	Turn-off Delay Time			28		
t _f	Turn-off Fall Time			11		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =8A		14		nC
Q _{gs}	Gate-Source Charge			4.5		
Q _{gd}	Gate-Drain Charge			3.4		

- 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 $T_J = 25^{\circ}\text{C}$, $L = 0.5\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 14A$, $V_{GS} = 10V$.
 - 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
KS6411HAT	SOP8	Tape&Reel	3000	13"	12mm

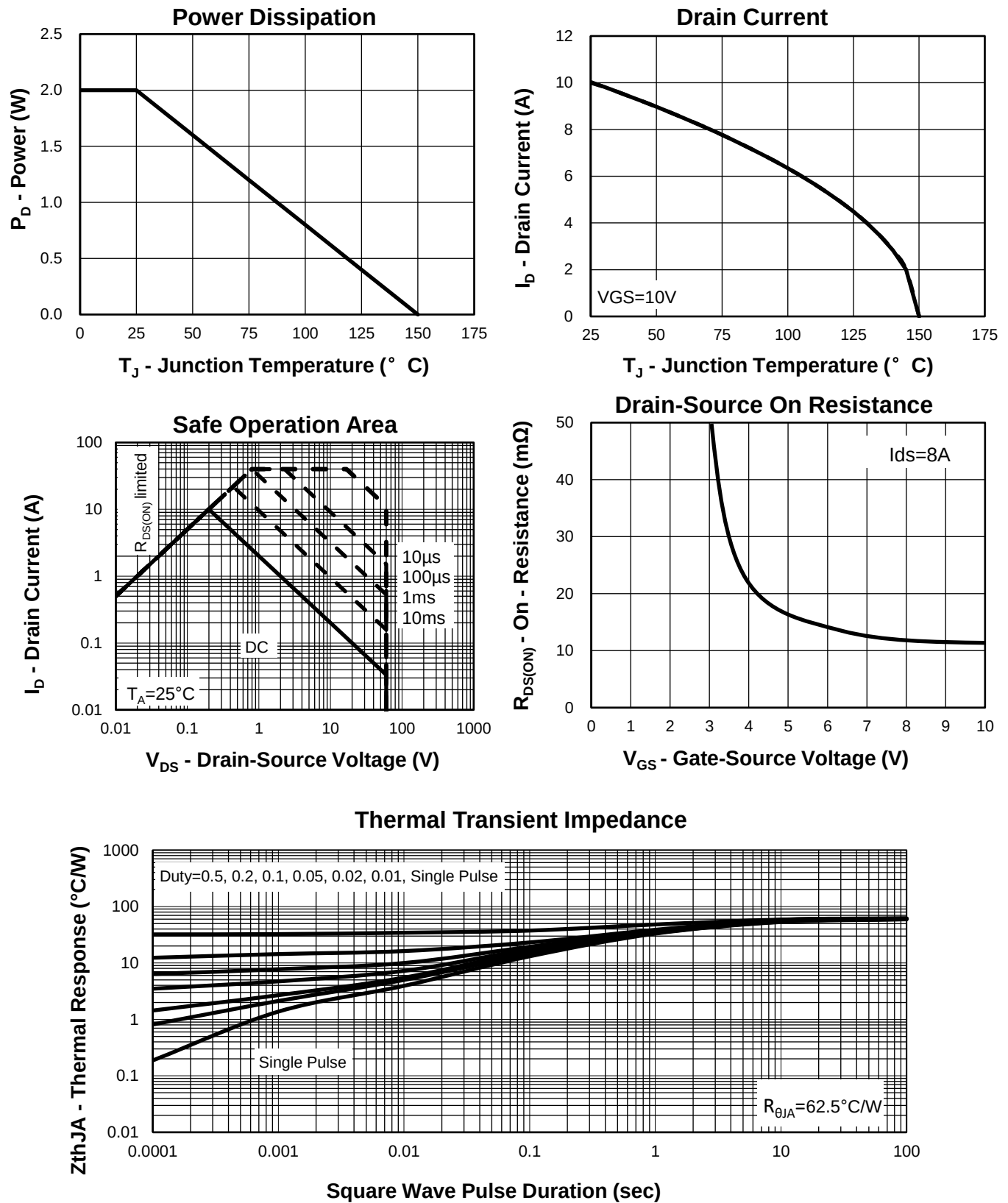


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

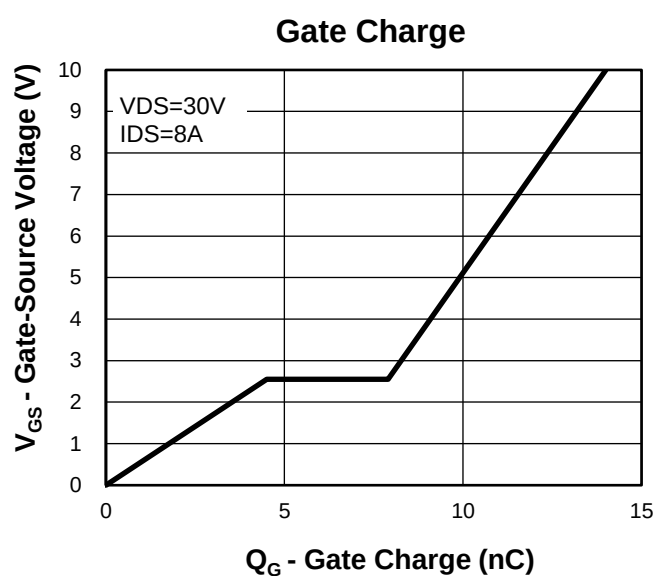
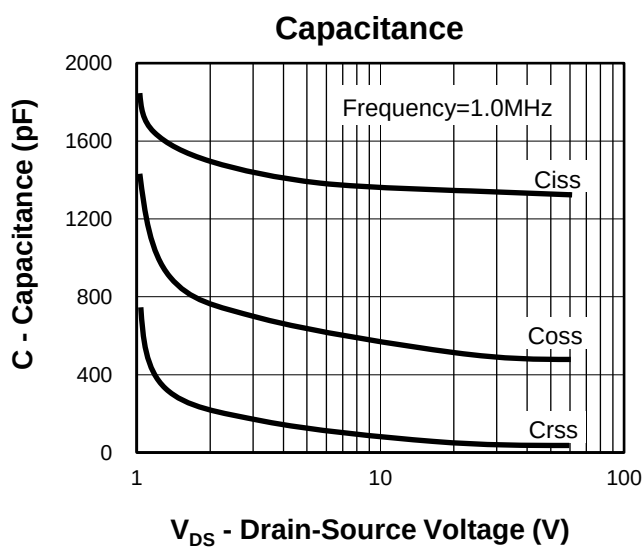
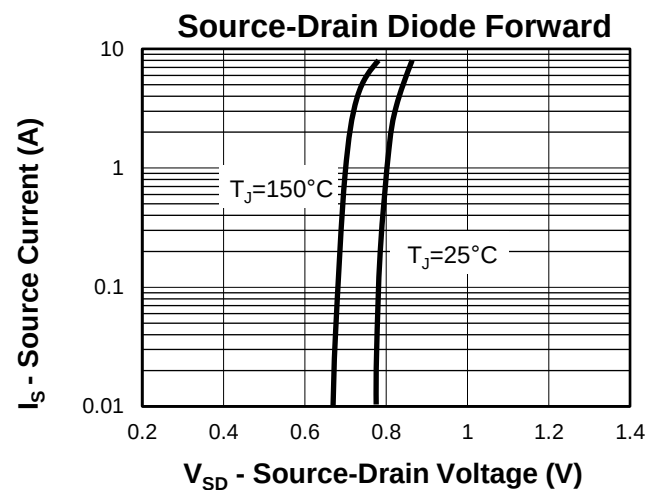
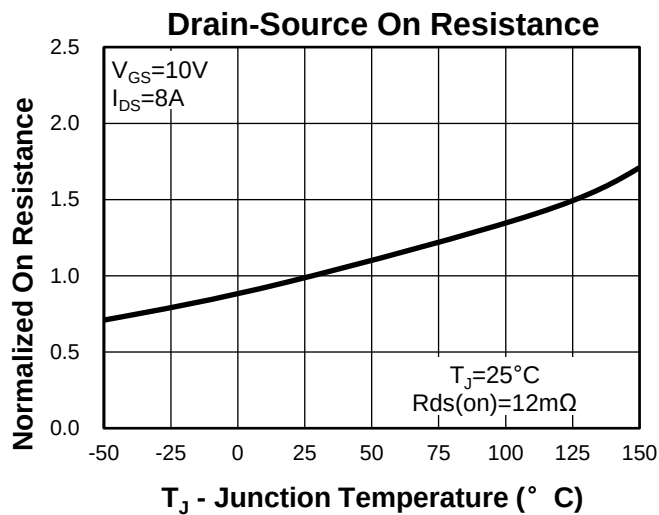
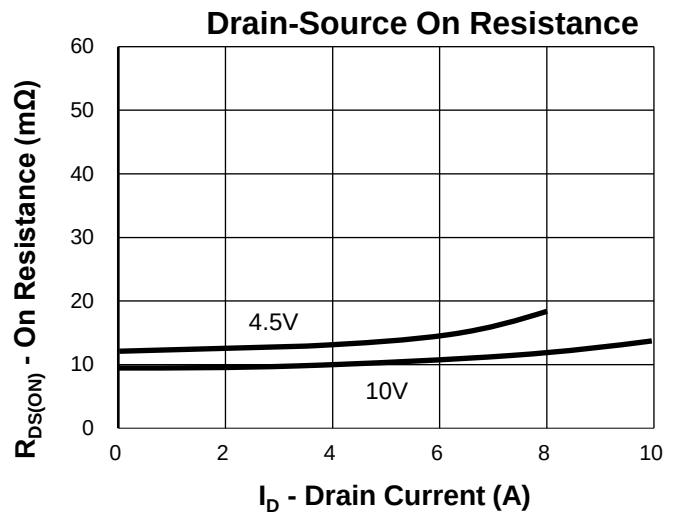
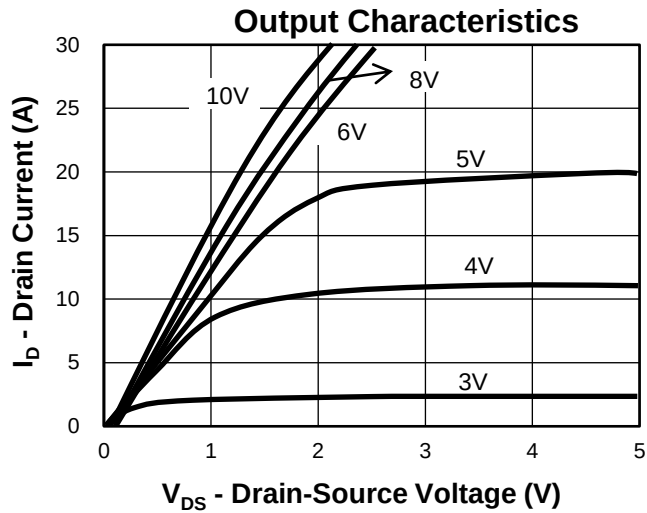
2nd Line: Part Number(6411T)

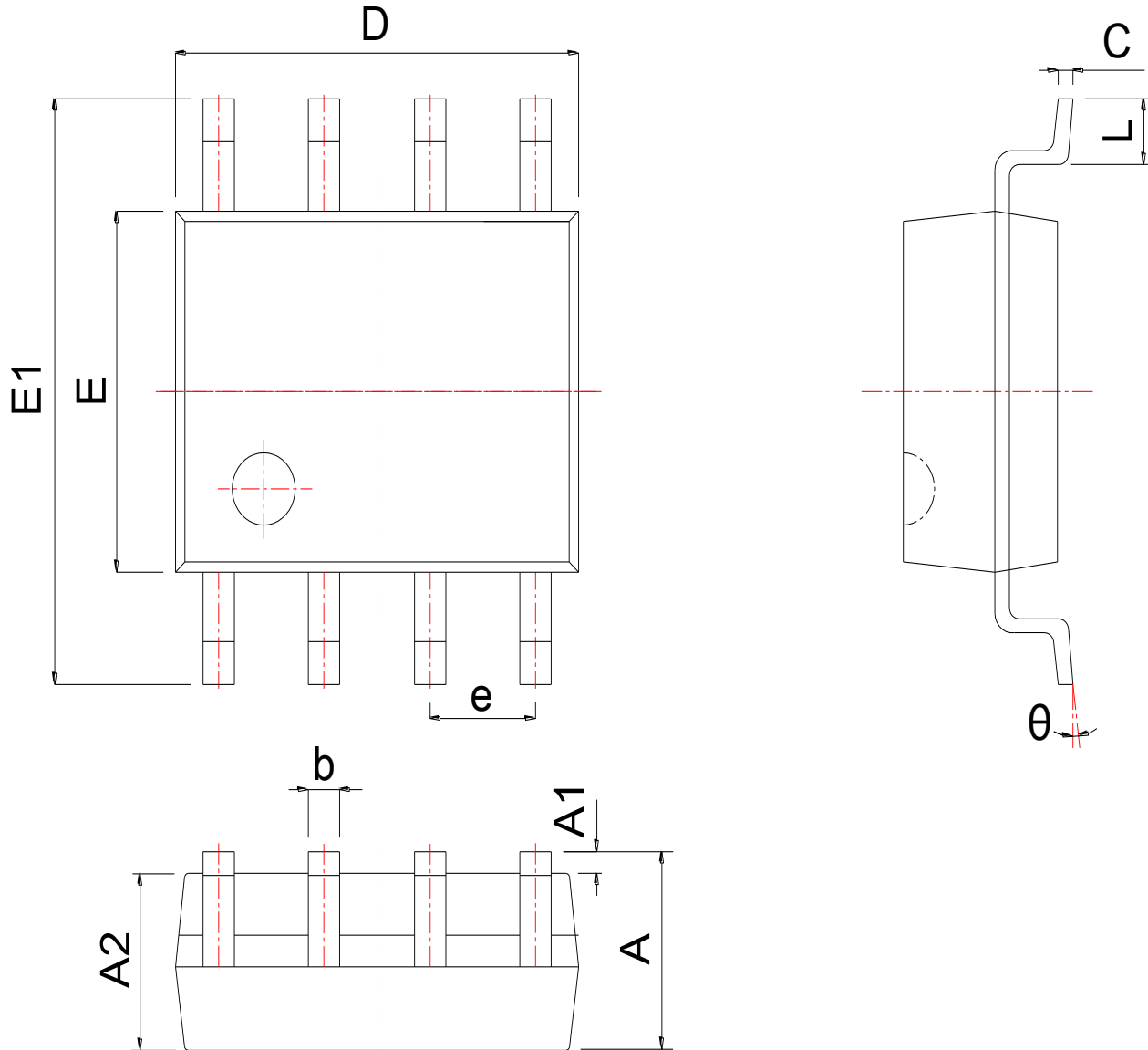
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



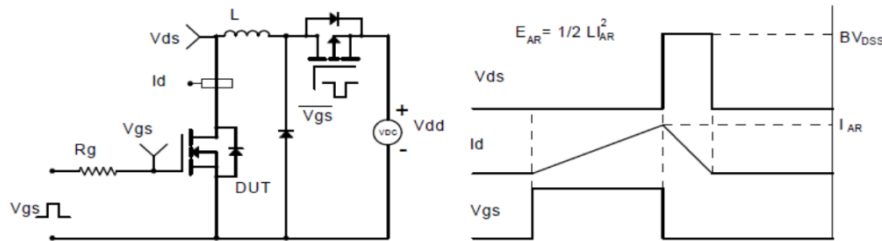
Typical Characteristics



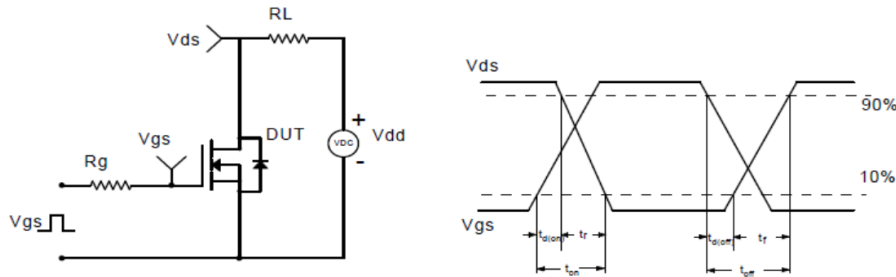
Package Information
SOP8


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°

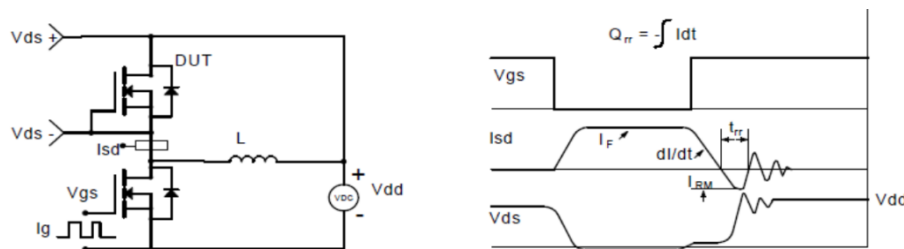
Avalanche Test Circuit and Waveforms



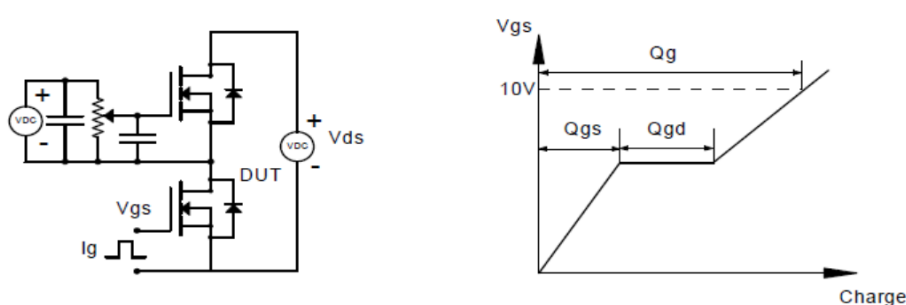
Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

Kwansemi Semiconductor Co.,Ltd

Email:Sales@kwansemi.com

Web:www.kwansemi.com

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