

Features

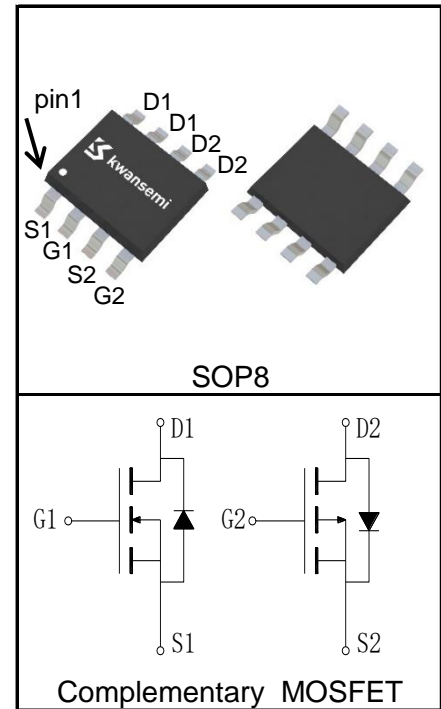
- N-Channel
100V/3.7A,
 $R_{DS(ON)} = 80m\Omega (Typ.) @ V_{GS}=10V$
 $R_{DS(ON)} = 85m\Omega (Typ.) @ V_{GS}=4.5V$
- P-Channel
-100V/-3A,
 $R_{DS(ON)} = 120m\Omega (Typ.) @ V_{GS}=-10V$
 $R_{DS(ON)} = 145m\Omega (Typ.) @ V_{GS}=-4.5V$
- Super High Dense Cell Design
- Fast Switching

Applications

- Load Switch



Pin Description



Absolute Maximum Ratings

Symbol	Parameter	N-Channel	P-Channel	Unit	
Common Ratings ($T_A=25^\circ C$ Unless Otherwise Noted)					
V_{DSS}	Drain-Source Voltage	100	-100	V	
V_{GSS}	Gate-Source Voltage	± 20	± 20		
T_{Jmax}	Maximum Junction Temperature	150	150	$^\circ C$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	-55 to 150	$^\circ C$	
I_S	Diode Continuous Forward Current	$T_A=25^\circ C$	1.6	-1.6	A
Mounted on Large Heat Sink					
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_A=25^\circ C$	14	-12	A
$I_D^{②}$	Continuous Drain Current ($V_{GS}=\pm 10V$)	$T_A=25^\circ C$	3.7	-3	A
		$T_A=70^\circ C$	3	-2.4	
P_D	Maximum Power Dissipation	$T_A=25^\circ C$	2	2	W
		$T_A=70^\circ C$	1.3	1.3	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead		40	40	$^\circ C/W$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient		62.5	62.5	$^\circ C/W$
Drain-Source Avalanche Ratings					
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed		12	56	mJ

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

Symbol	Parameter	Test Condition	KS1618HA			Unit	
			Min.	Typ.	Max.		
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	N	100		V	
		$V_{GS}=0V, I_{DS}=-250\mu A$	P	-100			
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	N		1	μA	
		$T_J=125^\circ\text{C}$			30		
		$V_{DS}=-100V, V_{GS}=0V$	P		-1		
		$T_J=125^\circ\text{C}$			-30		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	N	1.2	1.7	2.1	V
		$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	P	-1.2	-1.7	-2.1	
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	N			± 100	nA
		$V_{GS}=\pm 20V, V_{DS}=0V$	P			± 100	
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=3A$	N		80	96	m Ω
		$V_{GS}=-10V, I_{DS}=-3A$	P		120	150	
		$V_{GS}=4.5V, I_{DS}=2A$	N		85	110	
		$V_{GS}=-4.5V, I_{DS}=-2A$	P		145	190	
Diode Characteristics							
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=3A, V_{GS}=0V$	N		0.81	1.2	V
		$I_{SD}=-3A, V_{GS}=0V$	P		-0.84	-1.2	
t_{rr}	Reverse Recovery Time	N-Channel $I_{SD}=3A, di_{SD}/dt=100A/\mu s$	N		15		ns
			P		21		
Q_{rr}	Reverse Recovery Charge	P-Channel $I_{SD}=-3A, di_{SD}/dt=100A/\mu s$	N		28		nC
			P		40		
Dynamic Characteristics⁽⁶⁾							
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	N		3		Ω
			P		22		
C_{iss}	Input Capacitance	N-Channel $V_{GS}=0V, V_{DS}=50V,$ Frequency=1.0MHz	N		725		pF
			P		720		
C_{oss}	Output Capacitance	P-Channel $V_{GS}=0V, V_{DS}=-50V,$ Frequency=1.0MHz	N		40		
			P		65		
C_{rss}	Reverse Transfer Capacitance		N		25		
			P		15		

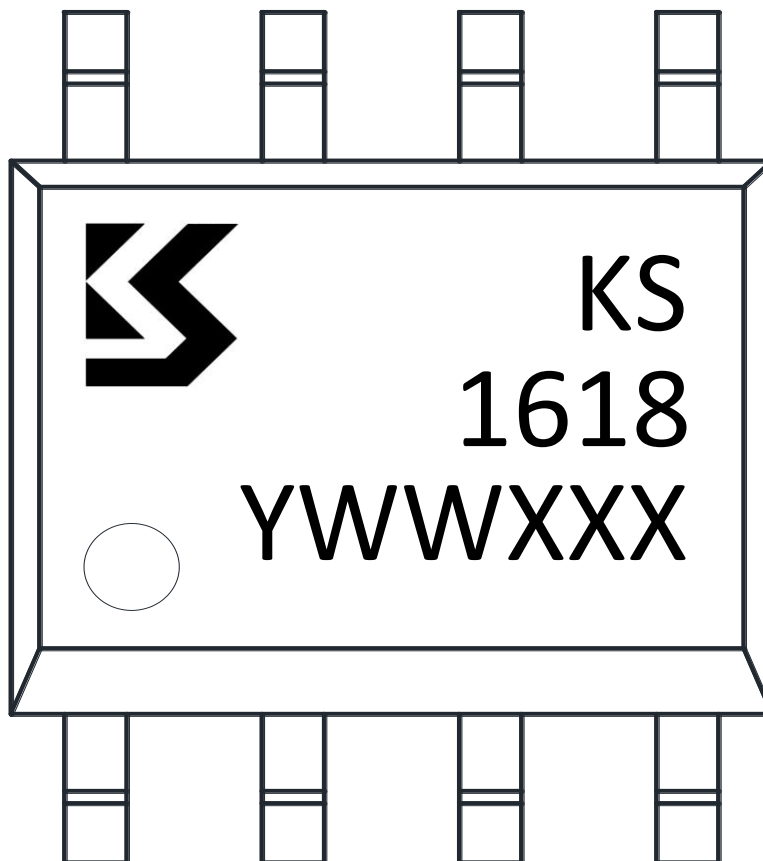
Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS1618HA			Unit	
			Min.	Typ.	Max.		
Dynamic Characteristics ^⑥							
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=50\text{V}$, $I_{DS}=3\text{A}$, $V_{GEN}=10\text{V}$, $R_G=3\Omega$ P-Channel $V_{DD}=-50\text{V}$, $I_{DS}=-3\text{A}$, $V_{GEN}=-10\text{V}$, $R_G=3\Omega$	N		8		ns
			P		9		
t_r	Turn-on Rise Time		N		13		
			P		15		
$t_{d(OFF)}$	Turn-off Delay Time		N		27		
			P		23		
t_f	Turn-off Fall Time		N		11		
			P		10		
Gate Charge Characteristics ^⑥							
Q_g	Total Gate Charge	N-Channel $V_{DS}=50\text{V}$, $V_{GS}=10\text{V}$, $I_{DS}=3\text{A}$ P-Channel $V_{DS}=-50\text{V}$, $V_{GS}=-10\text{V}$, $I_{DS}=-3\text{A}$	N		17		nC
			P		13		
Q_{gs}	Gate-Source Charge		N		1.9		
			P		1.8		
Q_{gd}	Gate-Drain Charge		N		4.2		
			P		2.6		

- 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 $T_J = 25^\circ\text{C}$, N Channel: $I_{ASmax} = 7\text{A}$, $L=0.5\text{mH}$, $V_{DD} = 24\text{V}$, $R_G = 25\Omega$, $V_{GS}=10\text{V}$, Part not recommended for use above this value. P-Chanel: $I_{ASmax} = -15\text{A}$, $L=0.5\text{mH}$, $V_{DD} = -24\text{V}$, $R_G = 25\Omega$, $V_{GS}=-10\text{V}$, Part not recommended for use above this value.
 - ⑤ Pulse test; Pulse width $\leq 300\mu\text{s}$, 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
KS1618HA	SOP8	Tape&Reel	3000	13"	12mm

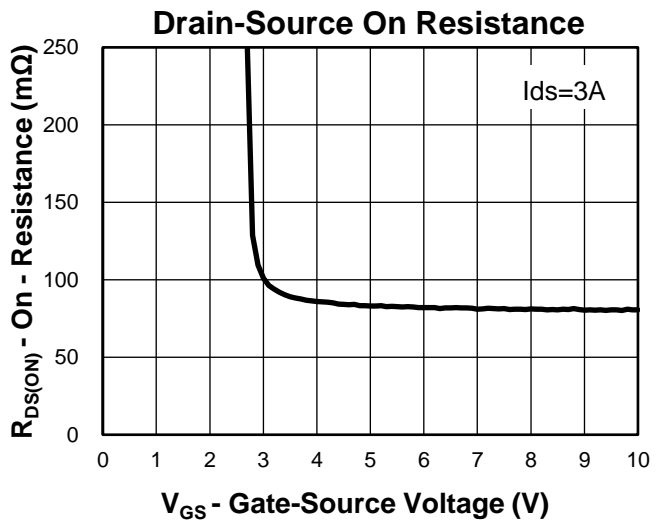
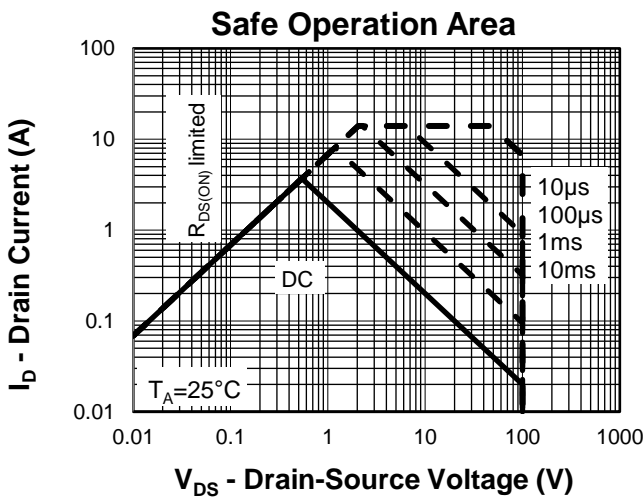
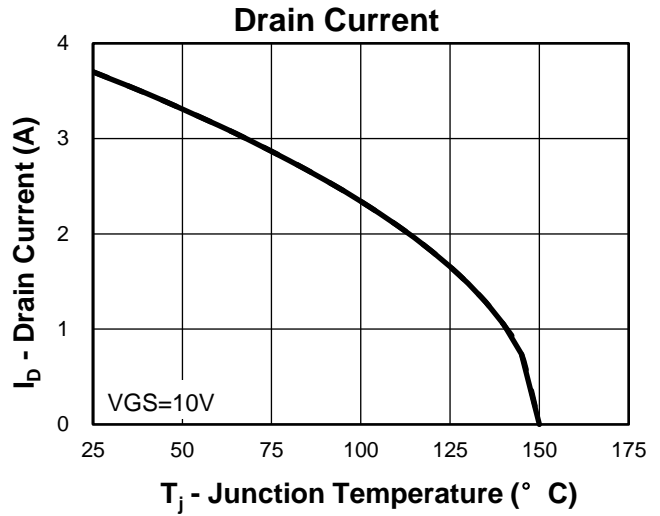
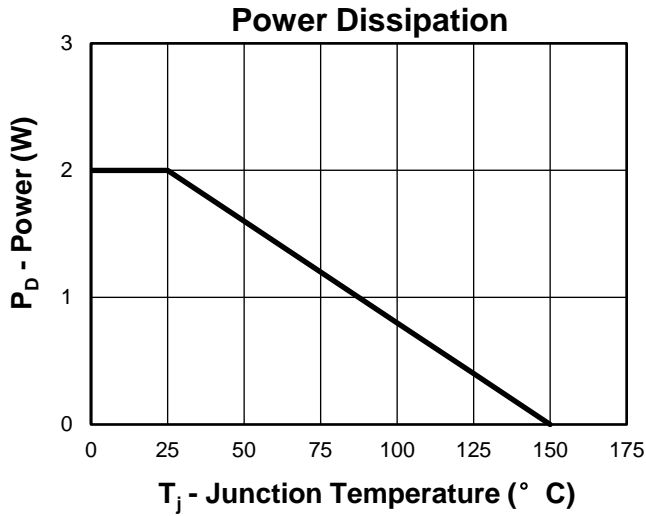


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

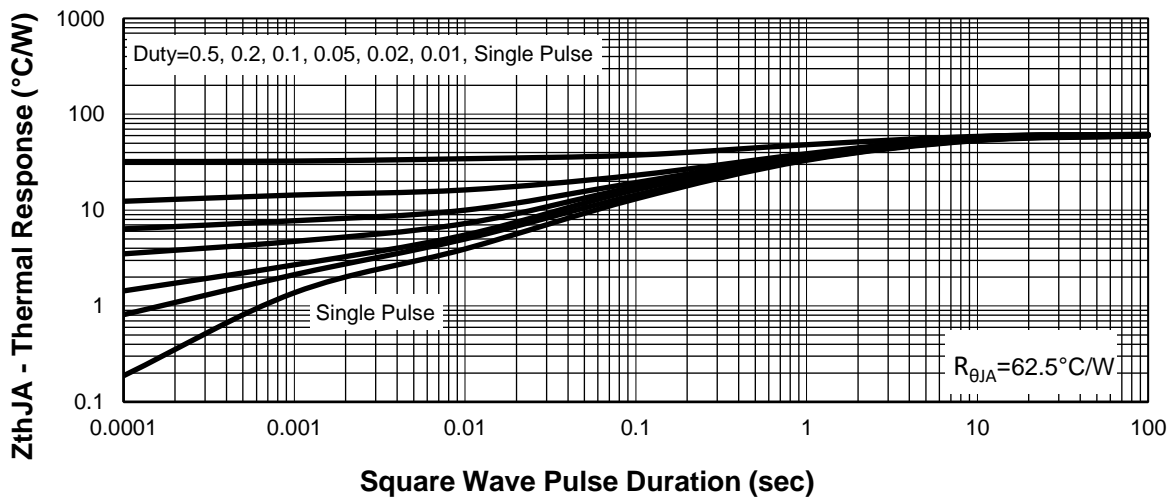
2nd Line: Part Number(1618)

3rd Line: Lot Number(YWWXXX)

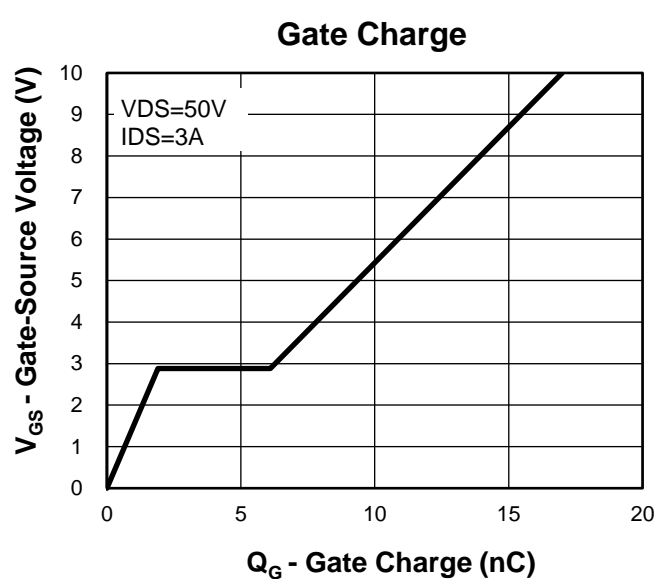
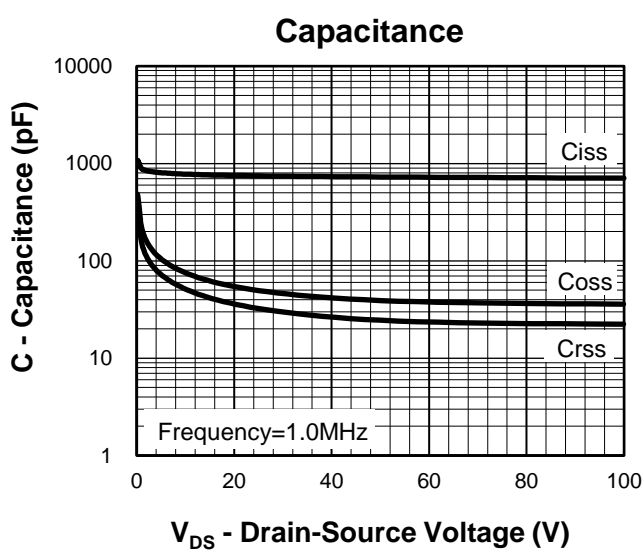
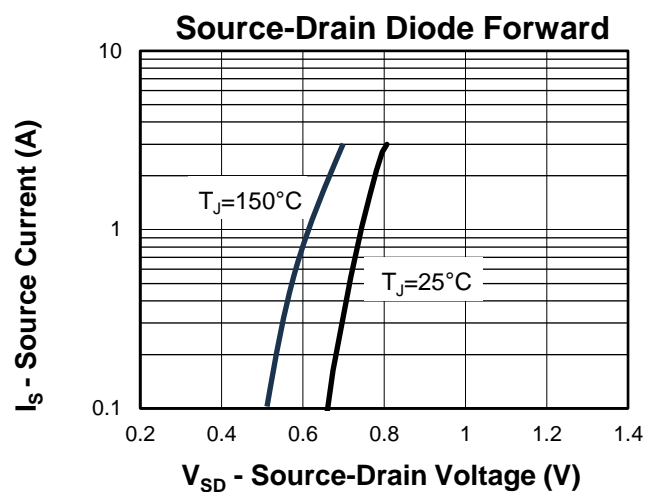
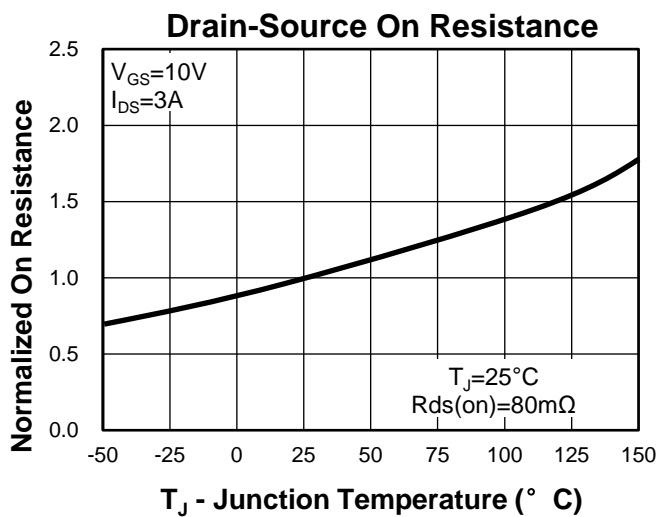
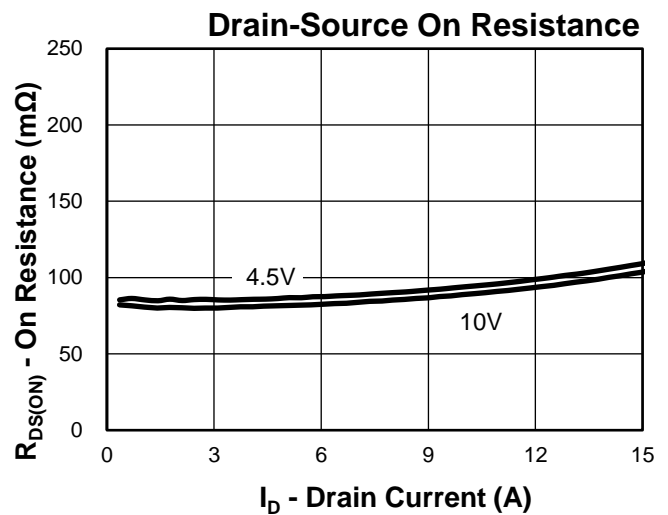
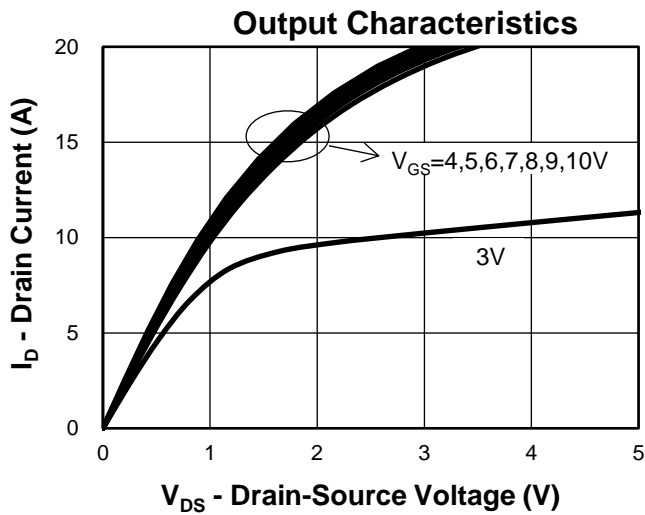
Typical Characteristics(N-Channel)



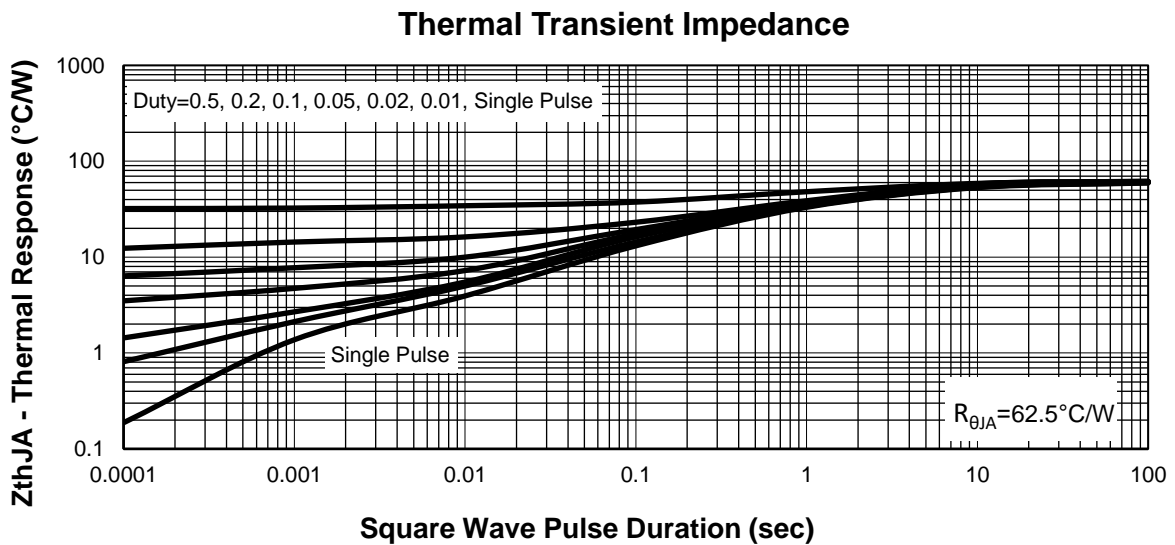
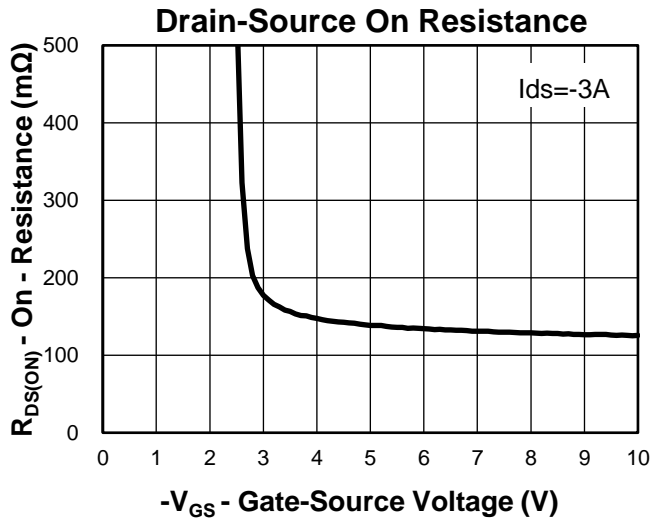
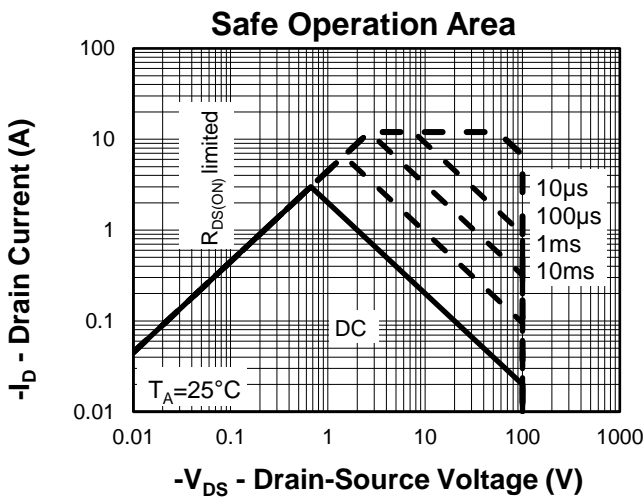
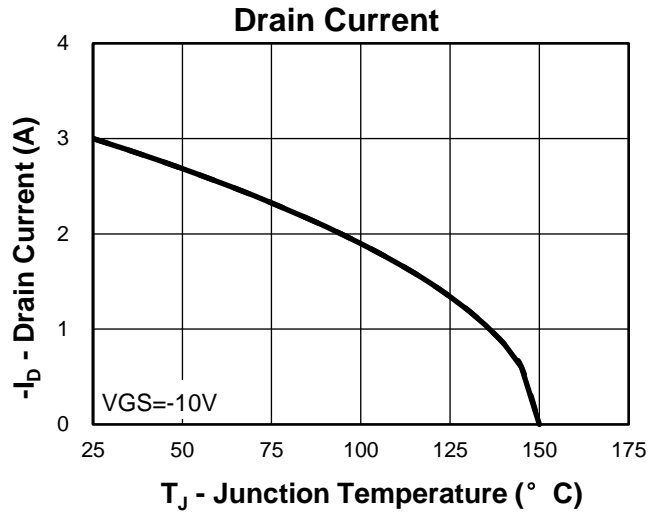
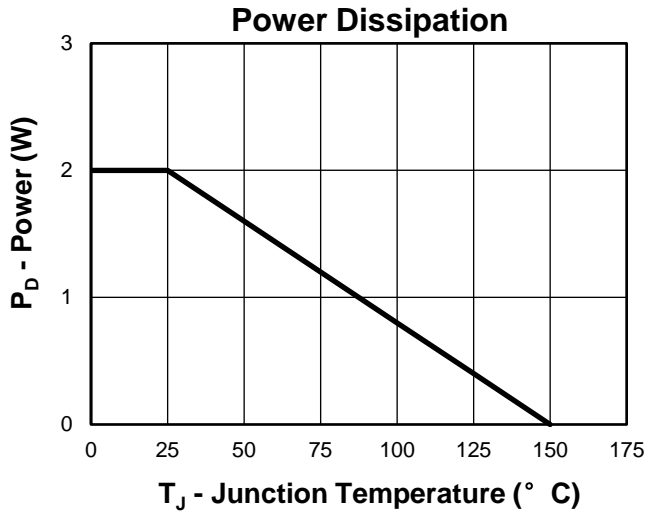
Thermal Transient Impedance



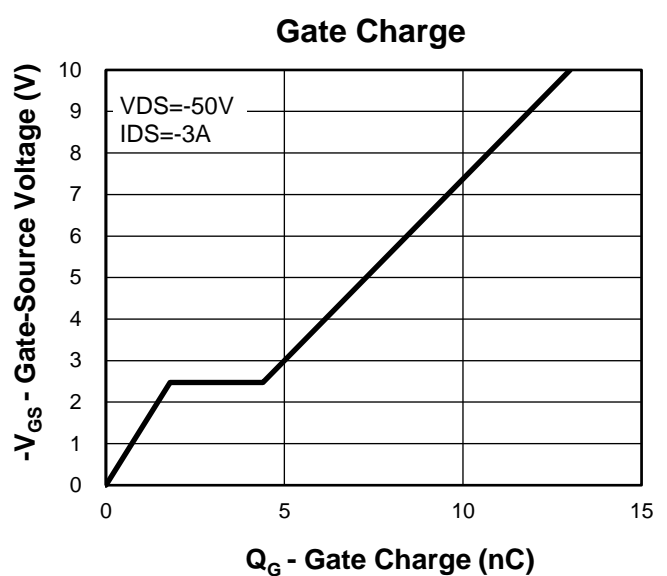
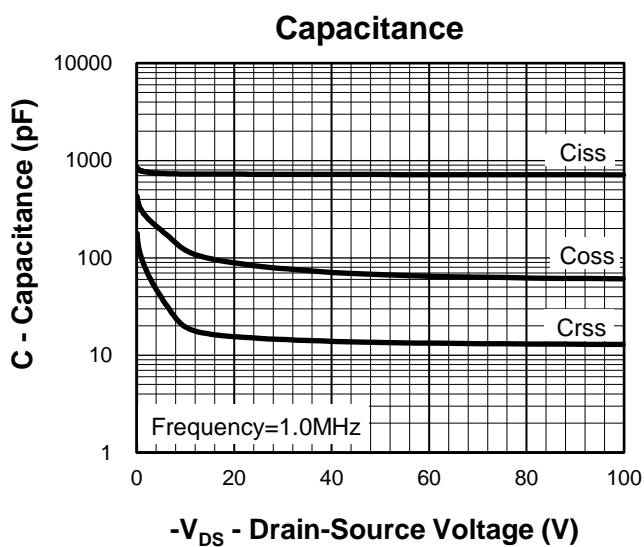
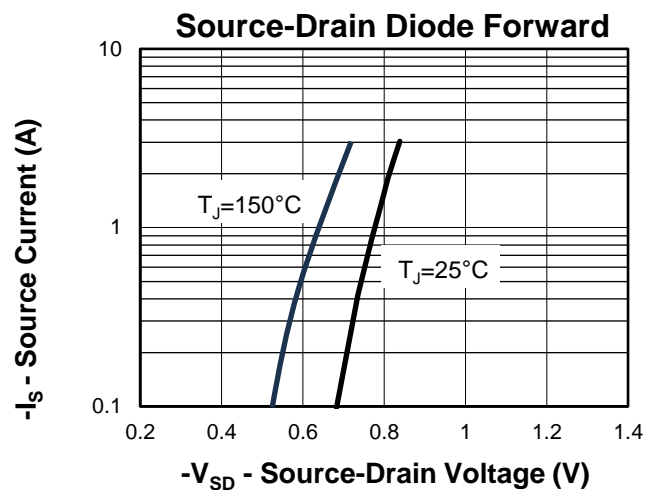
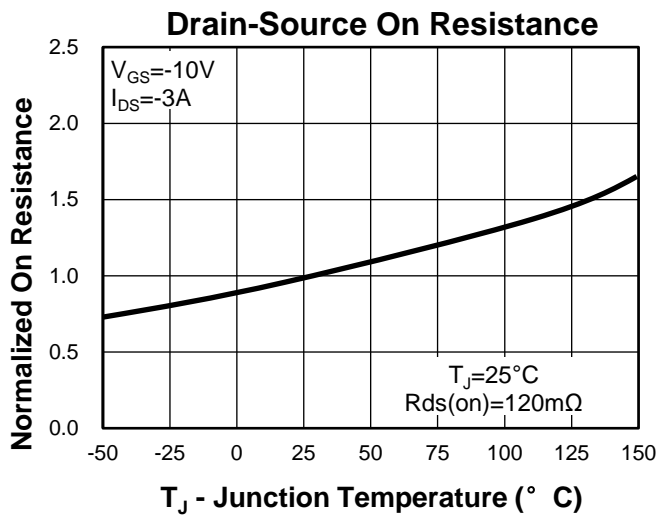
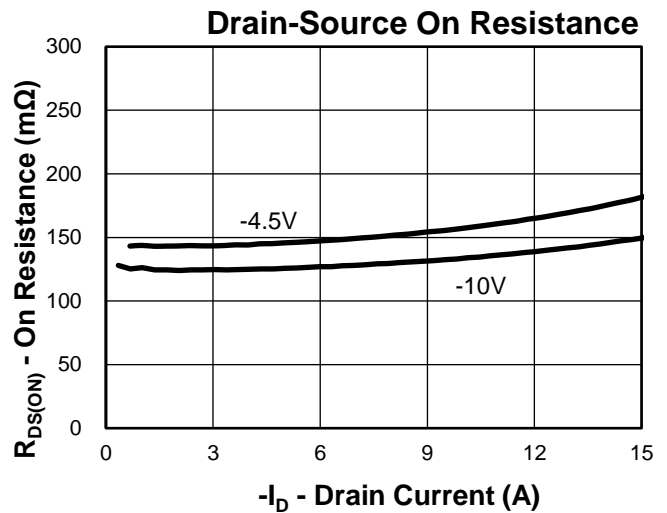
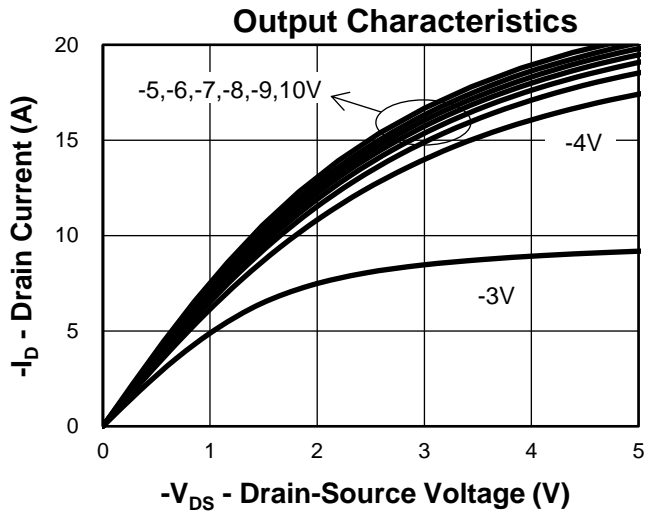
Typical Characteristics(N-Channel)

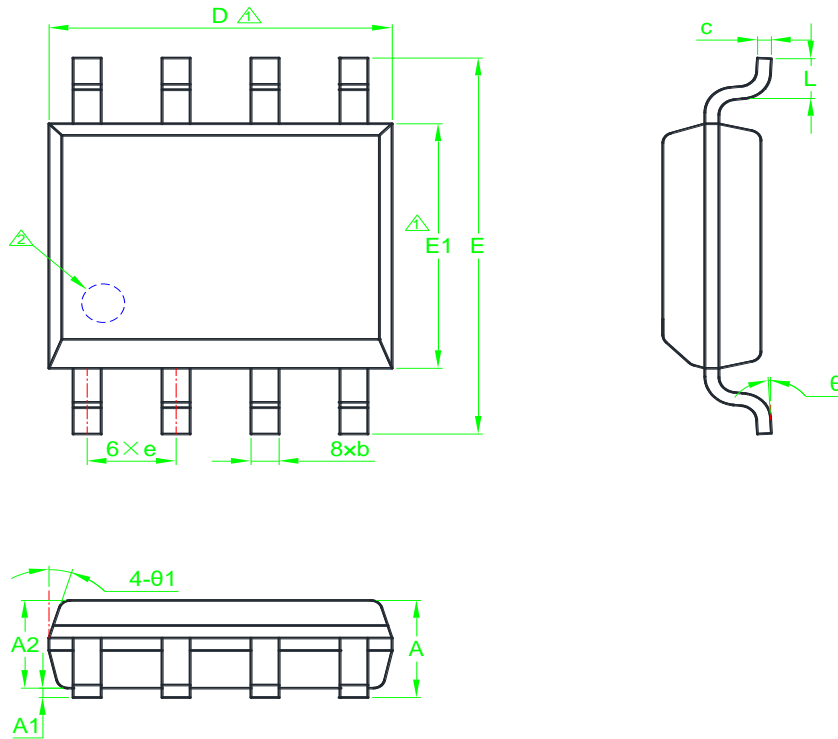


Typical Characteristics(P-Channel)



Typical Characteristics(P-Channel)



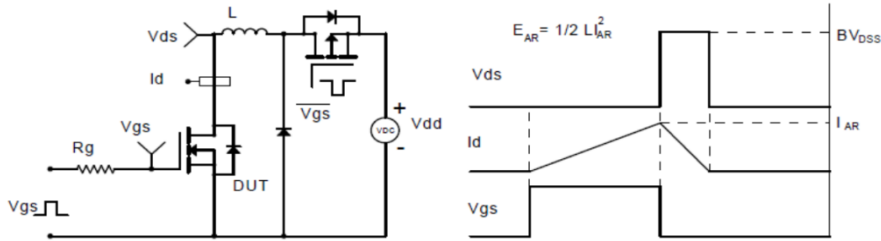
Package Information
SOP8


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°
$\theta 1$	5°	*	15°	5°	*	15°

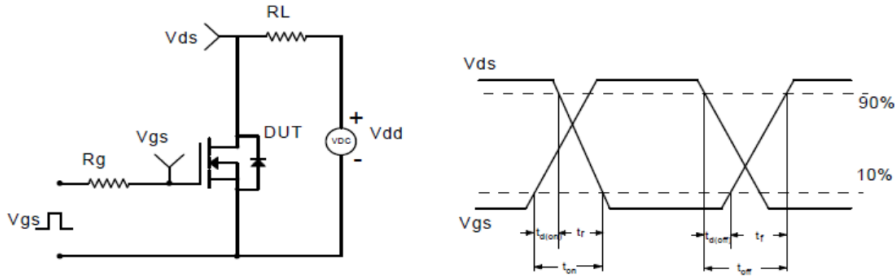
① Dimensions D and E1 do not include mold flash protrusions or gate burrs.

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

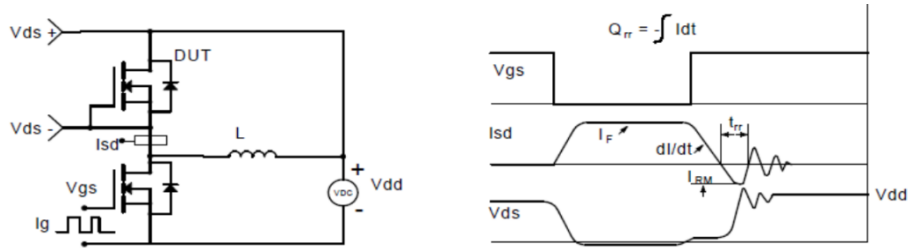
Avalanche Test Circuit and Waveforms(N-Channel)



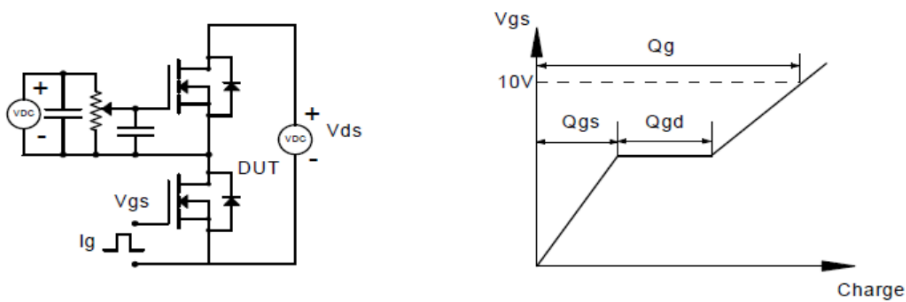
Switching Time Test Circuit and Waveforms(N-Channel)

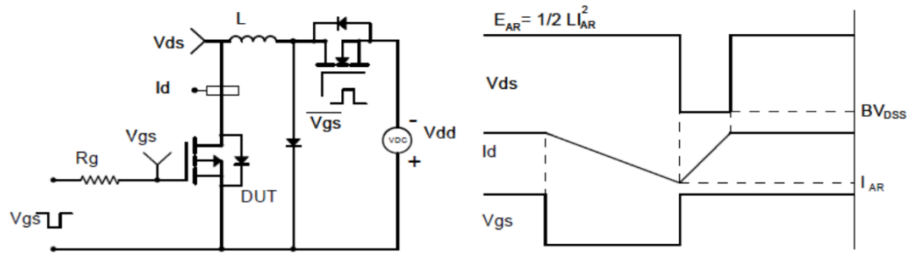
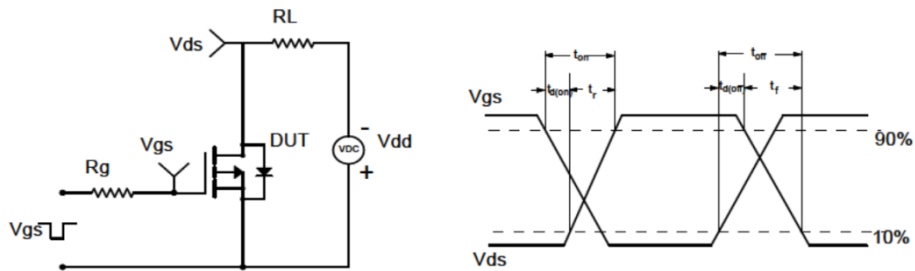
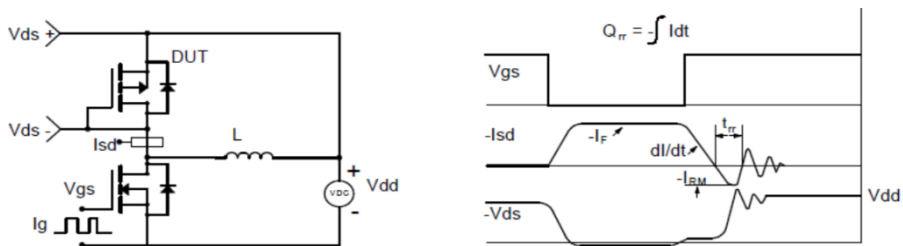
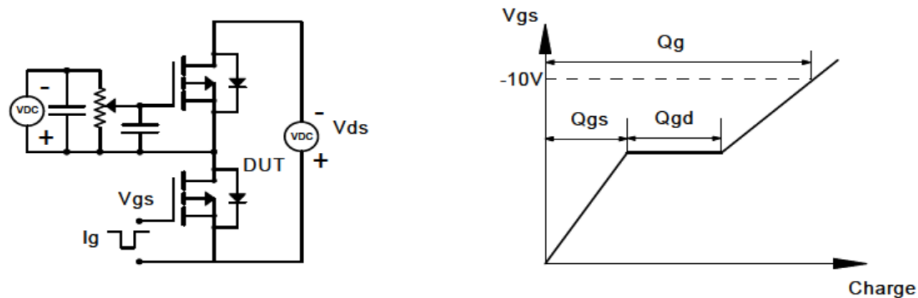


Diode Recovery Test Circuit and Waveforms(N-Channel)



Gate Charge Test Circuit and Waveform(N-Channel)



Avalanche Test Circuit and Waveforms(P-Channel)

Switching Time Test Circuit and Waveforms(P-Channel)

Diode Recovery Test Circuit and Waveforms(P-Channel)

Gate Charge Test Circuit and Waveform(P-Channel)

Customer Service

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