

Features

- N-Channel
40V/34A,
 $R_{DS(ON)} = 12m\Omega$ (Typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 18m\Omega$ (Typ.) @ $V_{GS}=4.5V$
- P-Channel
-40V/-23A,
 $R_{DS(ON)} = 28m\Omega$ (Typ.) @ $V_{GS}=-10V$
 $R_{DS(ON)} = 40m\Omega$ (Typ.) @ $V_{GS}=-4.5V$
- Very low on-resistance
- Fast Switching

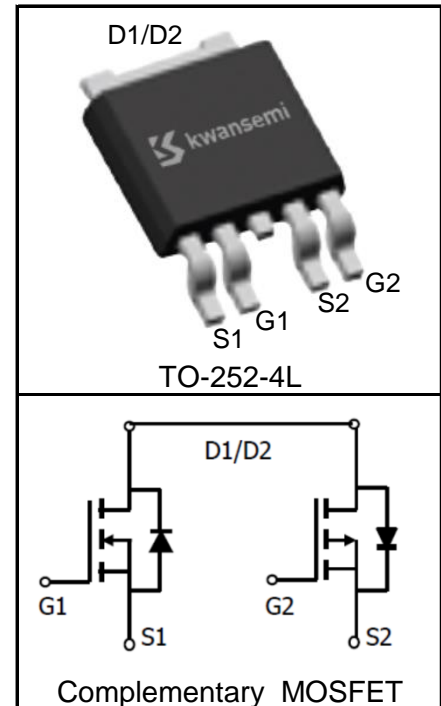
Applications

- Load Switch



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter	N-Channel	P-Channel	Unit
Common Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage	40	-40	V
V_{GSS}	Gate-Source Voltage	± 20	± 20	V
T_J	Maximum Junction Temperature	150	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	-55 to 150	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 34	-23	A
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 60	-60	A
$I_D^{②}$	Continuous Drain Current ($V_{GS}=\pm 10V$)	$T_C=25^\circ\text{C}$ 34	-23	A
		$T_C=100^\circ\text{C}$ 21	-14	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 31	31	W
		$T_C=100^\circ\text{C}$ 12	12	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4	4	$^\circ\text{C/W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	100	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings				
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	25	36	mJ

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

Symbol	Parameter	Test Condition	KS4618DB4			Unit	
			Min.	Typ.	Max.		
Static Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	N	40		V	
		$V_{GS}=0V, I_{DS}=-250\mu A$	P	-40			
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$	N		1	μA	
		$T_J=125^\circ C$			30		
		$V_{DS}=-40V, V_{GS}=0V$	P		-1		
		$T_J=125^\circ C$			-30		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	N	1.1	1.6	2.3	V
		$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	P	-1.1	-1.6	-2.3	
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	$V_{GS}=10V, I_{DS}=12A$	N		12	18	m Ω
		$V_{GS}=-10V, I_{DS}=-12A$	P		28	36	
		$V_{GS}=4.5V, I_{DS}=8A$	N		18	25	
		$V_{GS}=-4.5V, I_{DS}=-8A$	P		40	55	
Diode Characteristics							
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=12A, V_{GS}=0V$	N		0.85	1.2	V
		$I_{SD}=-12A, V_{GS}=0V$	P		-0.85	-1.2	
t_{rr}	Reverse Recovery Time	N-Channel $I_{SD}=12A, di_{SD}/dt=100A/\mu s$	N		8.5		ns
			P		17		
Q_{rr}	Reverse Recovery Charge	P-Channel $I_{SD}=-12A, di_{SD}/dt=100A/\mu s$	N		8		nC
			P		7		
Dynamic Characteristics⁽⁶⁾							
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	N		3.3		Ω
			P		9.5		
C_{iss}	Input Capacitance	N-Channel $V_{GS}=0V, V_{DS}=20V,$ Frequency=1.0MHz	N		1290		pF
			P		1310		
C_{oss}	Output Capacitance	P-Channel $V_{GS}=0V, V_{DS}=-20V,$ Frequency=1.0MHz	N		100		
			P		115		
C_{rss}	Reverse Transfer Capacitance		N		85		
			P		90		

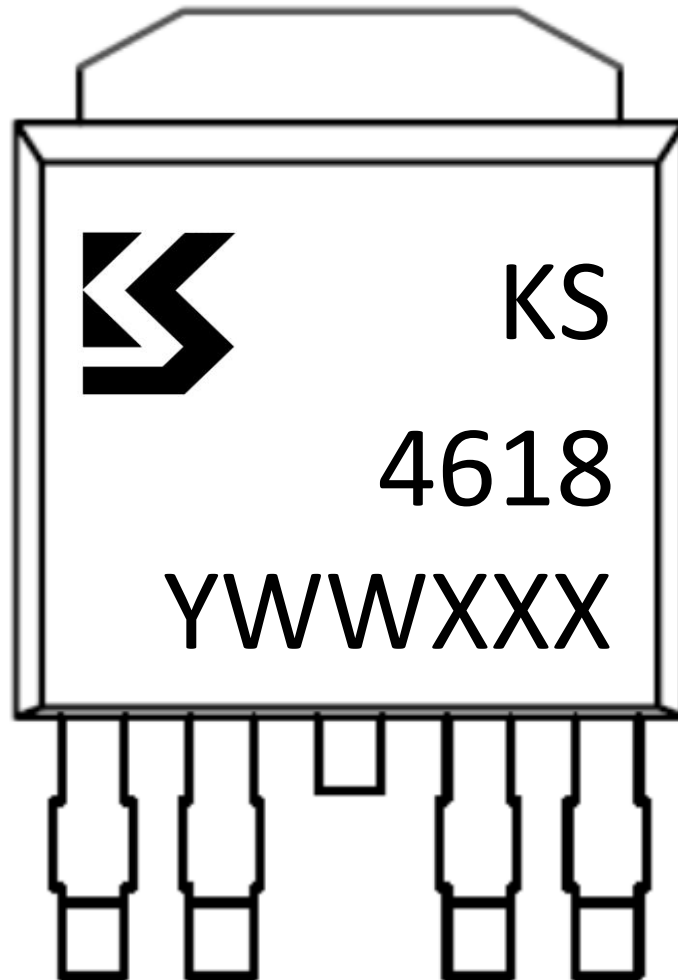
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS4618DB4			Unit	
			Min.	Typ.	Max.		
Dynamic Characteristics ^⑥							
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=20\text{V}, I_{DS}=12\text{A},$ $V_{GEN}=10\text{V}, R_G=3\Omega$ P-Channel $V_{DD}=-20\text{V}, I_{DS}=-12\text{A},$ $V_{GEN}= -10\text{V}, R_G=3\Omega$	N		7.5		ns
			P		9		
t_r	Turn-on Rise Time		N		4.8		
			P		7		
$t_{d(OFF)}$	Turn-off Delay Time		N		24		
			P		39		
t_f	Turn-off Fall Time		N		5.5		
			P		11		
Gate Charge Characteristics ^⑥							
Q_g	Total Gate Charge	N-Channel $V_{DS}=20\text{V}, V_{GS}=10\text{V},$ $I_{DS}=12\text{A}$ P-Channel $V_{DS}=-20\text{V}, V_{GS}= -10\text{V},$ $I_{DS}=-12\text{A}$	N		18		nC
			P		25		
Q_{gs}	Gate-Source Charge		N		3.5		
			P		4		
Q_{gd}	Gate-Drain Charge		N		4.2		
			P		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: $L = 0.5\text{mH}, R_G = 25\Omega, I_{AS} = 10\text{A}, V_{GS} = 10\text{V}$, P-Channel: $L = 0.5\text{mH}, R_G = 25\Omega, I_{AS} = -12\text{A}, V_{GS} = -10\text{V}$, 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.

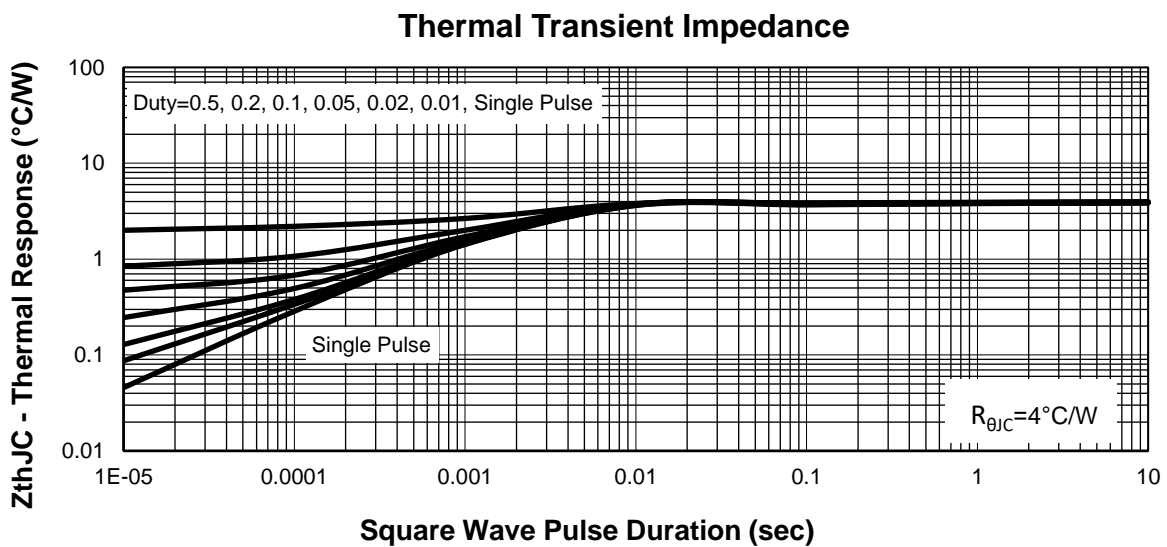
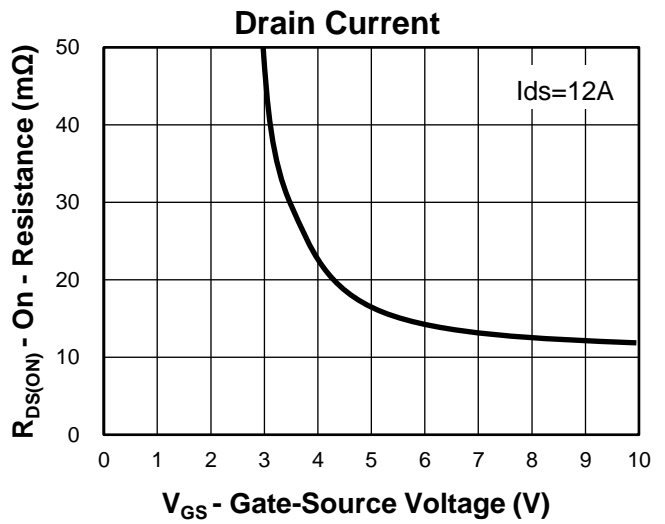
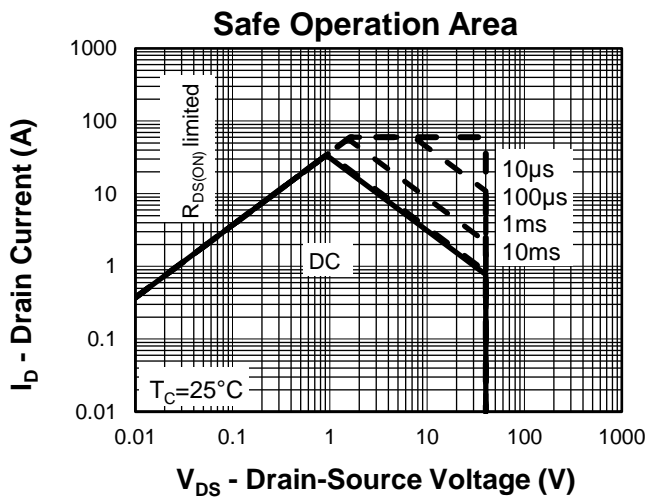
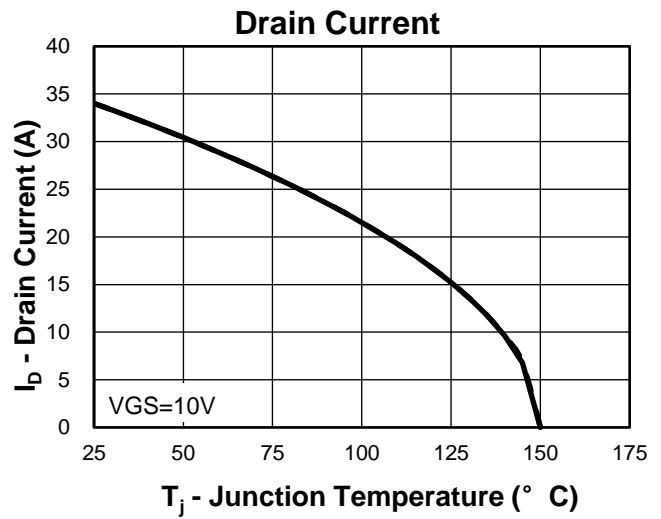
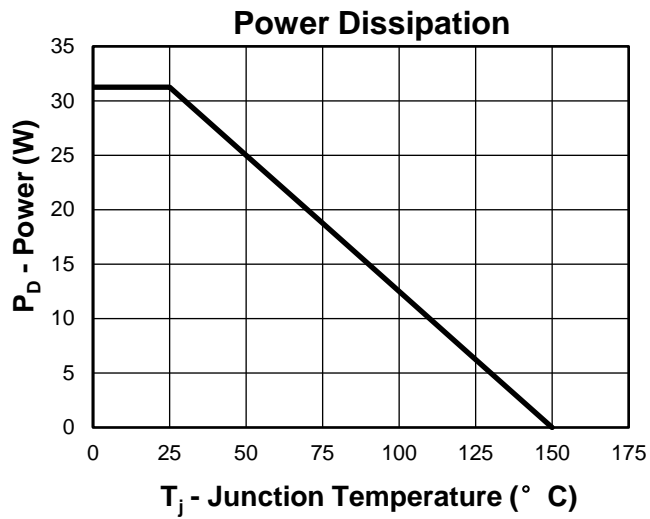
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS4618DB4	TO-252-4L	Tape&Reel	2500	13"	16mm

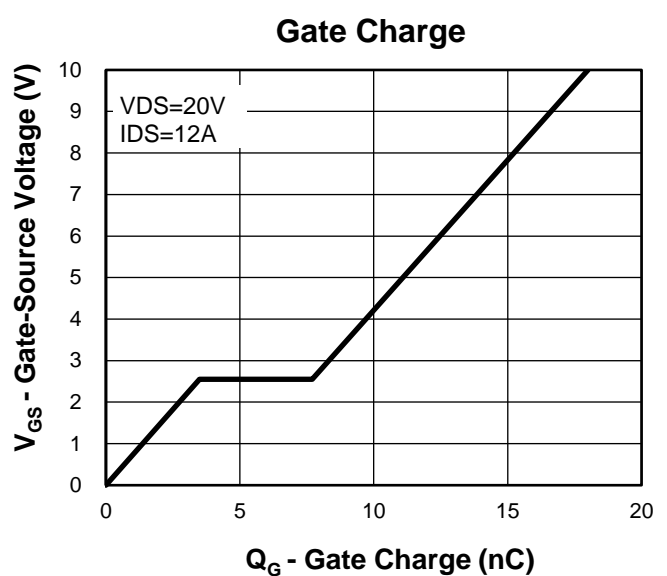
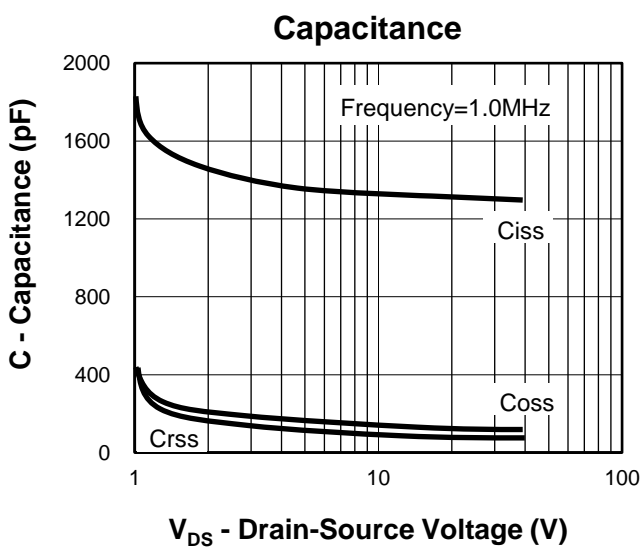
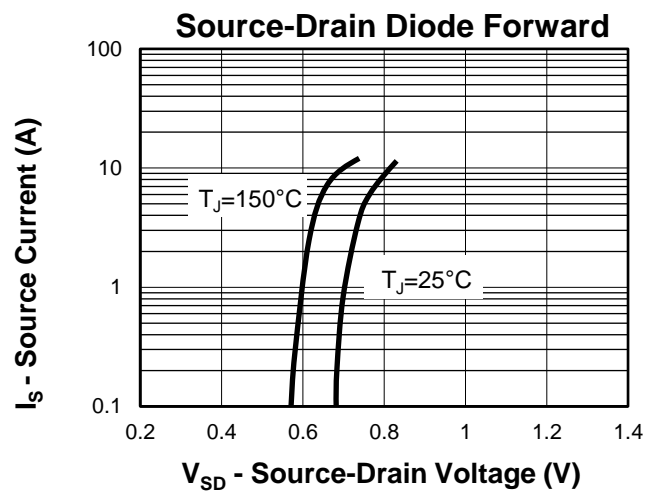
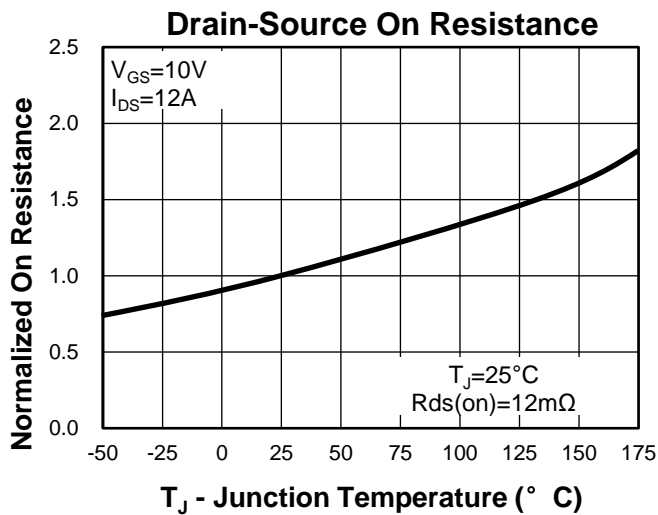
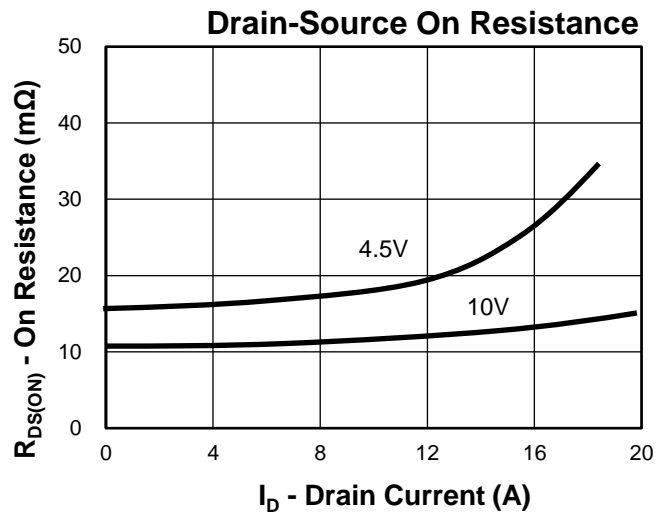
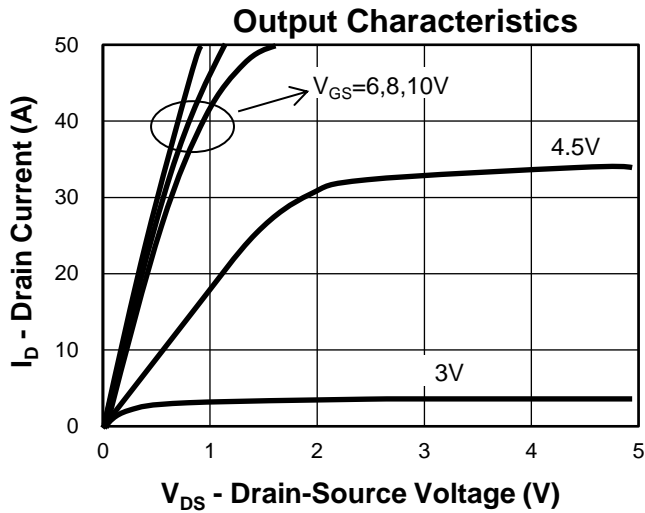


Y =Year,2017-A,2018-B,etc.
 WW =Week.
 XXX =Lot number.

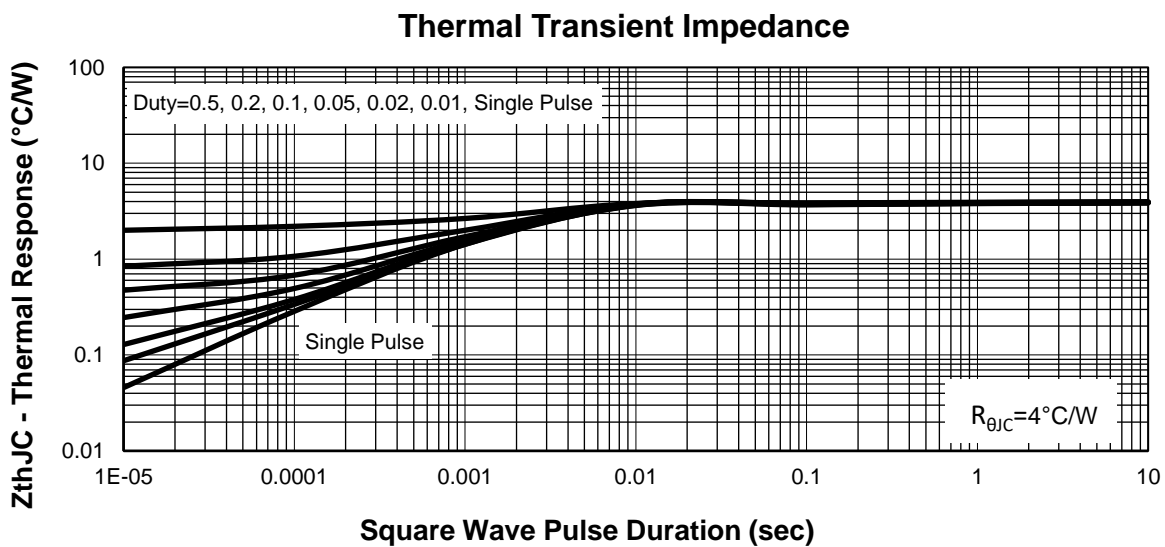
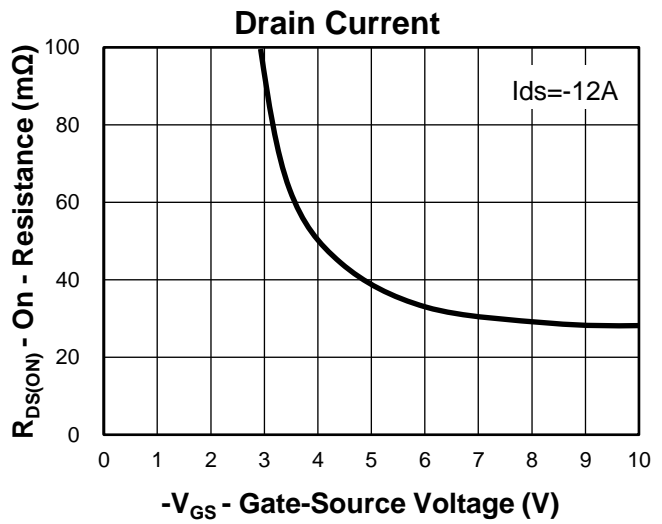
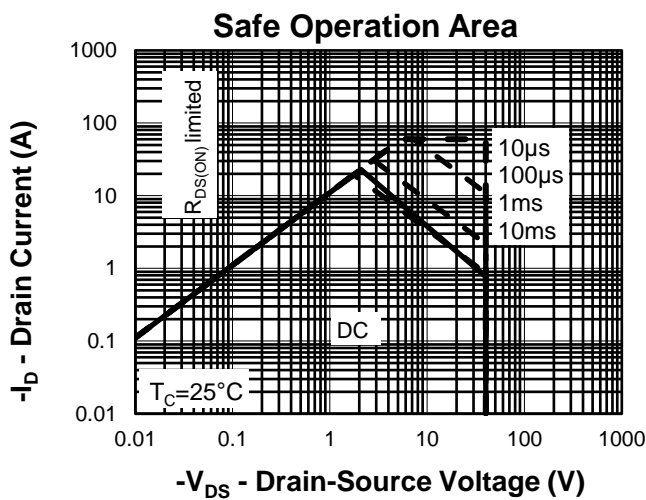
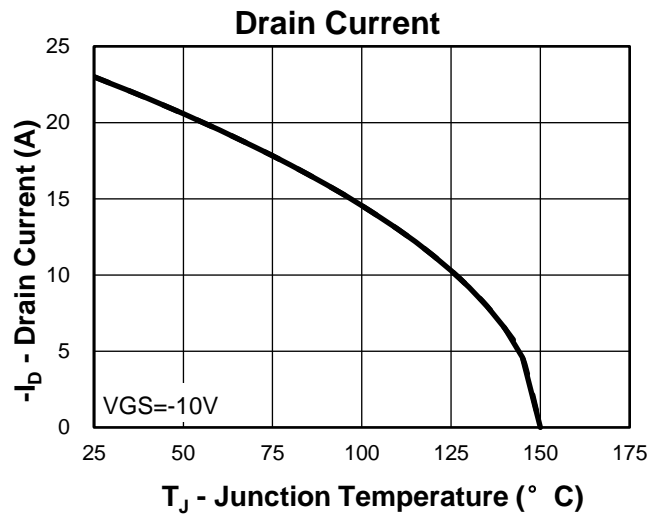
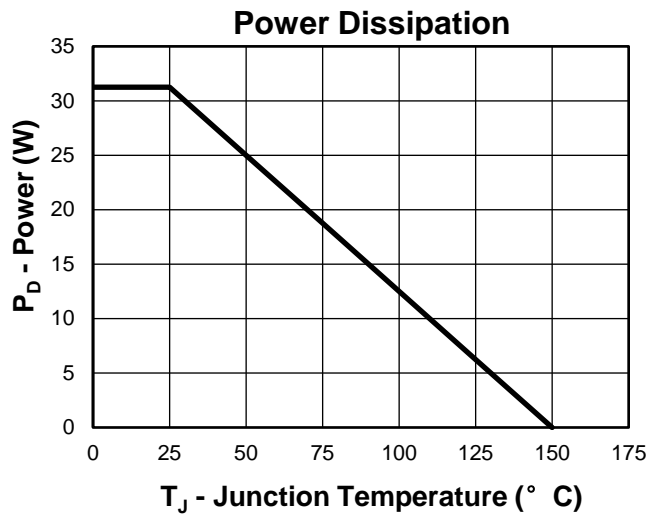
Typical Characteristics(N-Channel)



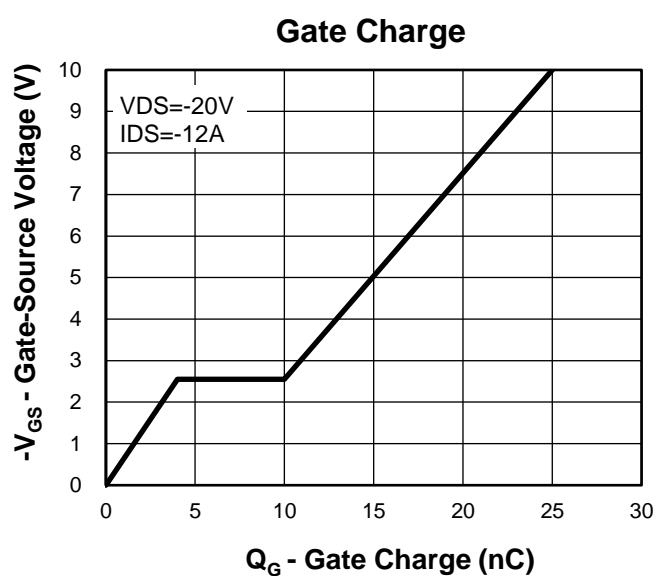
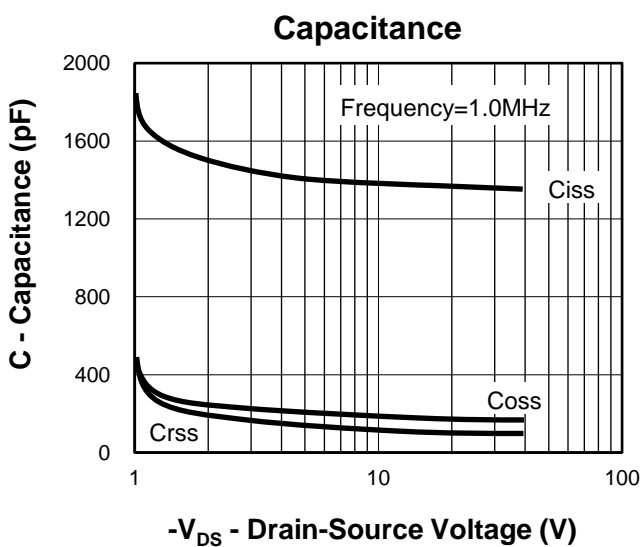
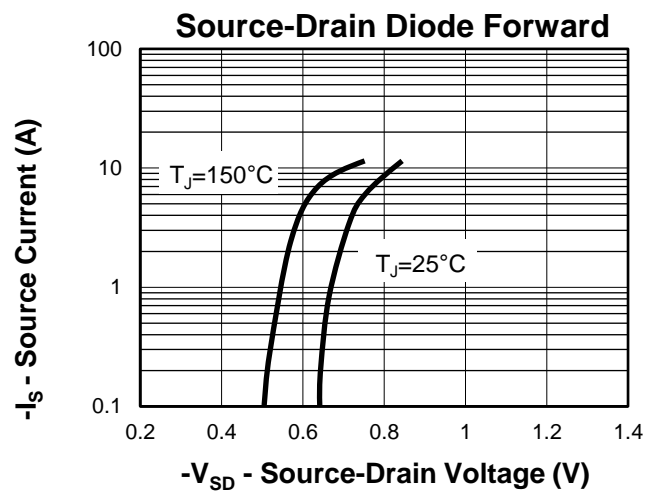
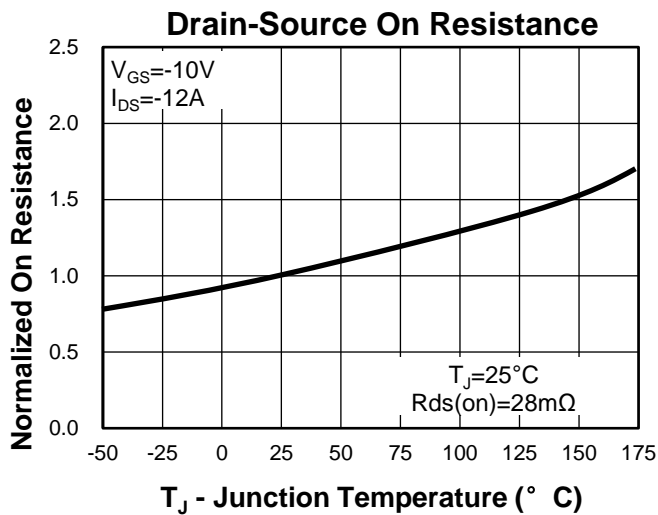
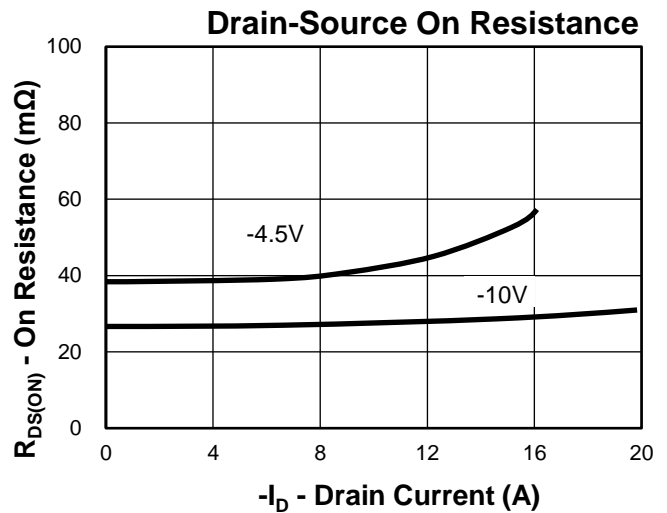
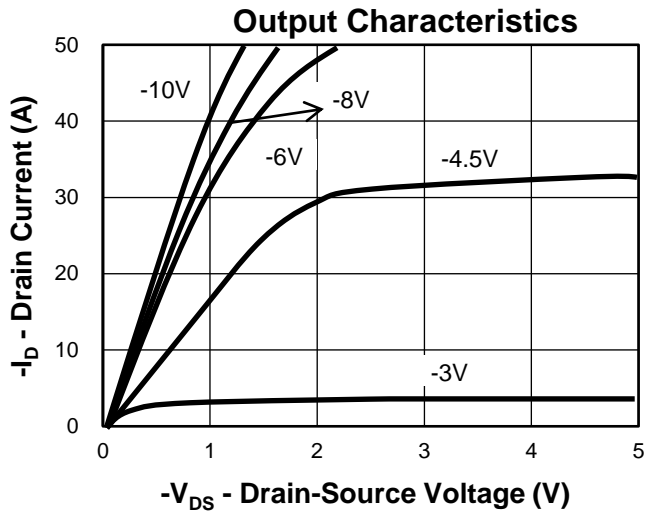
Typical Characteristics(N-Channel)

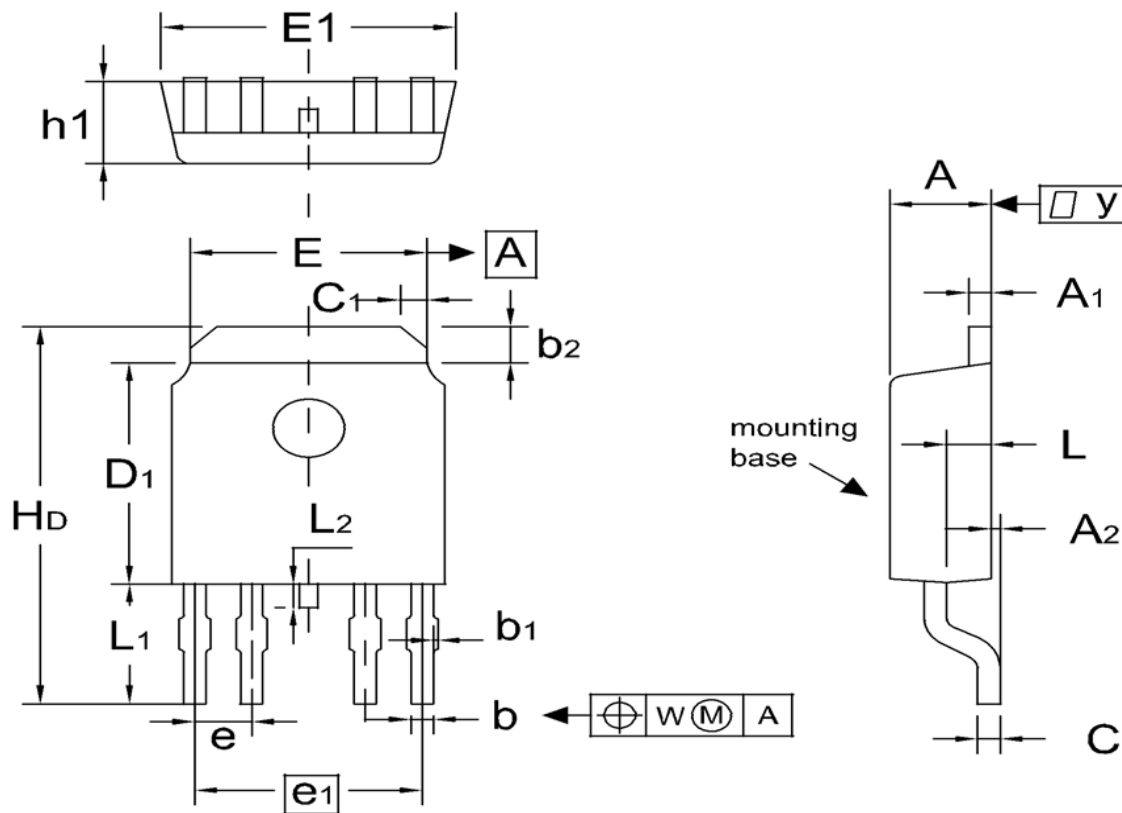


Typical Characteristics(P-Channel)



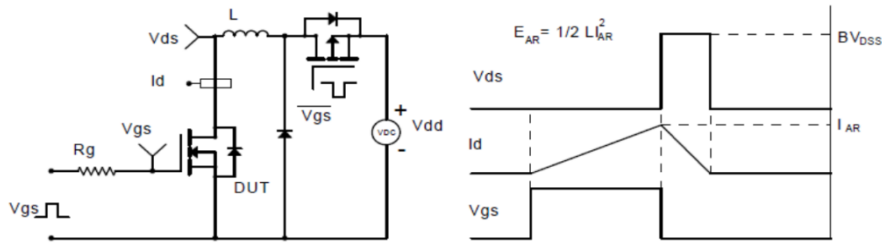
Typical Characteristics(P-Channel)



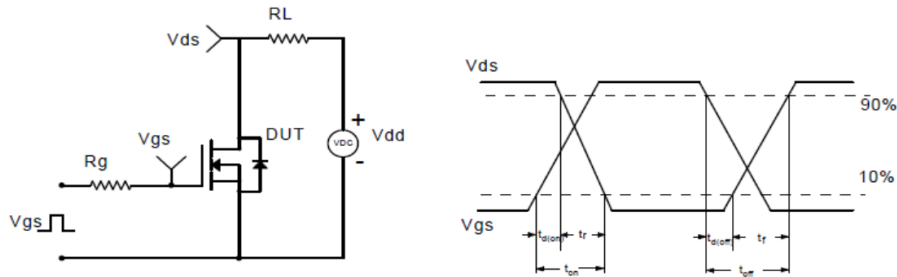
Package Information
TO-252-4L


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.190	2.285	2.380	0.086	0.090	0.094
A1	0.460	0.650	0.880	0.018	0.026	0.035
A2	--	--	0.127	--	--	0.005
b	0.510	0.610	0.710	0.020	0.024	0.028
b1	--	--	0.100	--	--	0.004
b2	0.890	1.080	1.270	0.035	0.043	0.050
C	0.460	0.530	0.600	0.018	0.021	0.024
C1	0.400	0.600	0.800	0.016	0.024	0.031
D1	5.970	6.095	6.220	0.235	0.240	0.245
E	4.320	4.890	5.460	0.170	0.193	0.215
E1	6.350	6.540	6.730	0.250	0.257	0.265
e		1.270 BSC			0.05 BSC	
e1		5.080 BSC			0.20 BSC	
H _D	9.60	10.00	10.40	0.378	0.39	0.409
h1	2.19	2.29	2.38	0.086	0.09	0.094
L	0.80	1.00	1.20	0.031	0.04	0.047
L1	2.60	2.90	3.20	0.102	0.11	0.126
L2	0.350	0.650	0.950	0.014	0.026	0.037

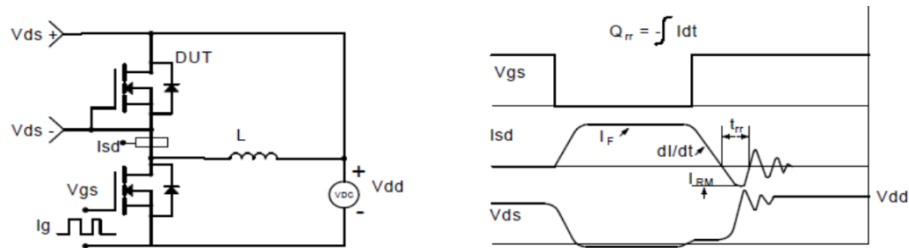
Avalanche Test Circuit and Waveforms(N-Channel)



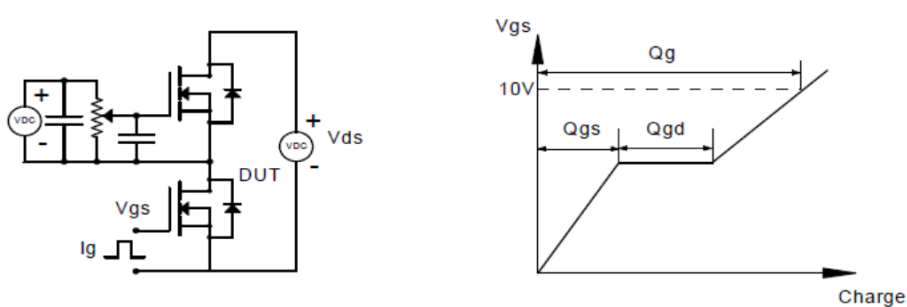
Switching Time Test Circuit and Waveforms(N-Channel)



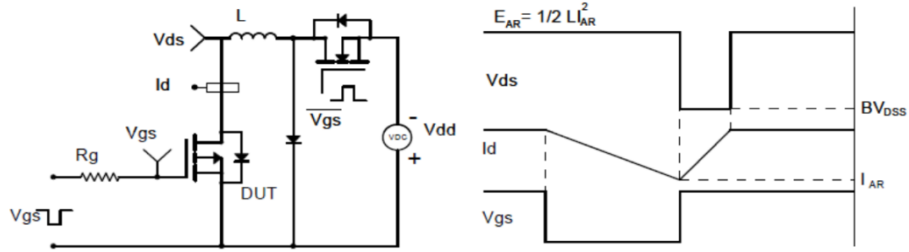
Diode Recovery Test Circuit and Waveforms(N-Channel)



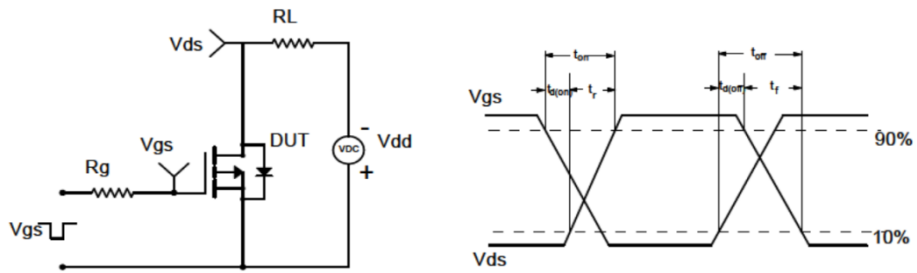
Gate Charge Test Circuit and Waveform(N-Channel)



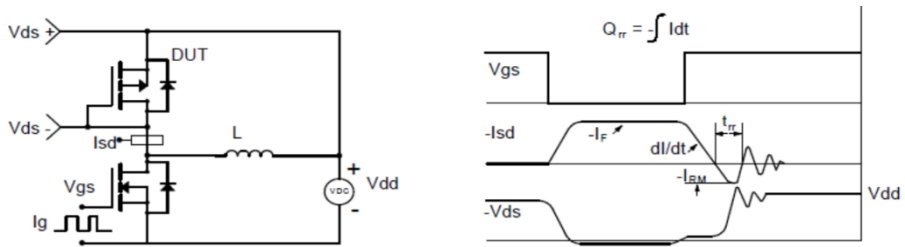
Avalanche Test Circuit and Waveforms(P-Channel)



Switching Time Test Circuit and Waveforms(P-Channel)



Diode Recovery Test Circuit and Waveforms(P-Channel)



Gate Charge Test Circuit and Waveform(P-Channel)

