

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

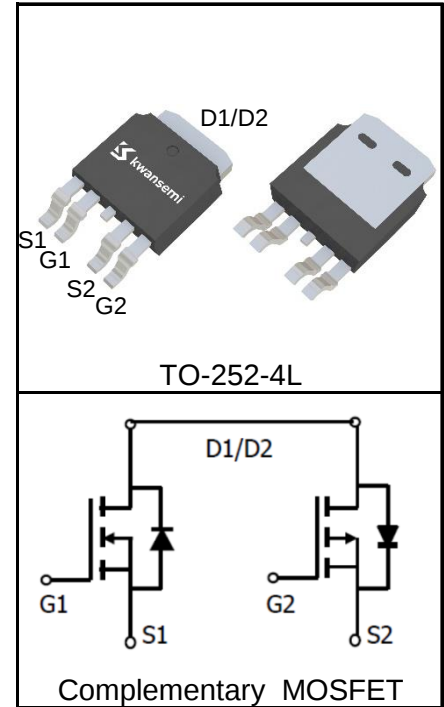
Applications

- 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	
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} =250μA	N	40			V
		V _{GS} =0V, I _{DS} =-250μA	P	-40			
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V	N			1	μA
				T _J =125°C			
		V _{DS} =-40V, V _{GS} =0V	P			-1	
				T _J =125°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	N	1.1	1.6	2.3	V
		V _{DS} =V _{GS} , I _{DS} =-250μA	P	-1.1	-1.6	-2.3	
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	N			±100	nA
		V _{GS} =±20V, V _{DS} =0V	P			±100	
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =12A	N		12	18	mΩ
		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/μs	N		8.5		ns
			P		17		
Q _{rr}	Reverse Recovery Charge	P-Channel I _{SD} =-12A, dI _{SD} /dt=100A/μs	N		8		nC
			P		7		
Dynamic Characteristics ^⑥							
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	N		3.1		Ω
			P		6.3		
C _{iss}	Input Capacitance	N-Channel V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	N		1230	2100	pF
			P		1395	2100	
C _{oss}	Output Capacitance		N		100	175	
			P		115	200	
C _{rss}	Reverse Transfer Capacitance	P-Channel V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz	N		90	155	
			P		100	175	

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

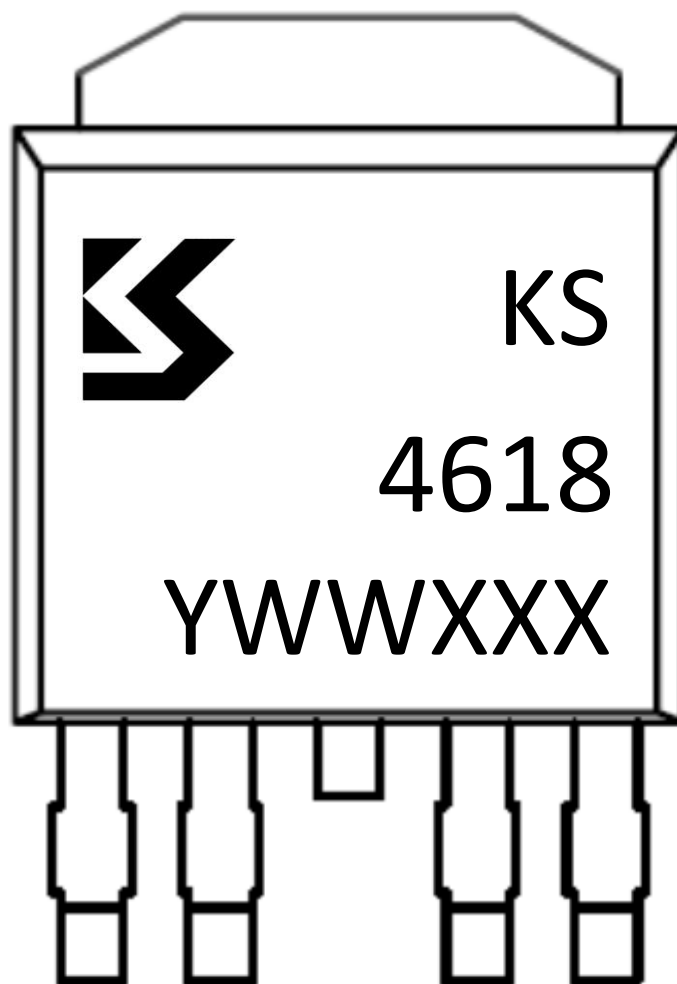
Symbol	Parameter	Test Condition	KS4618DB4			Unit	
			Min.	Typ.	Max.		
Dynamic Characteristics ^⑥							
t _{d(ON)}	Turn-on Delay Time	N-Channel V _{DD} =20V, I _{DS} =12A, V _{GEN} =10V, R _G =3Ω	N		7.5	ns	
t _r	Turn-on Rise Time		P		9		
			N		4.8		
			P		7		
		t _{d(OFF)}	Turn-off Delay Time	P-Channel V _{DD} =-20V, I _{DS} =-12A, V _{GEN} = -10V, R _G =3Ω	N		
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} =20V, V _{GS} =10V, I _{DS} =12A	N		18	nC	
			P		25		
Q _{gs}	Gate-Source Charge		P-Channel V _{DS} =-20V, V _{GS} = -10V, I _{DS} =-12A	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

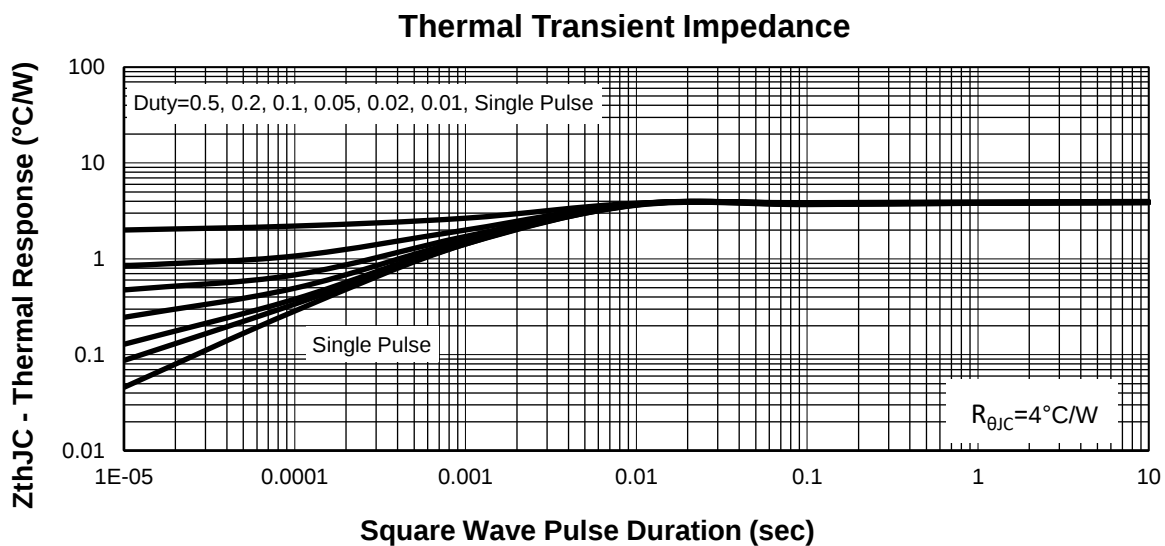
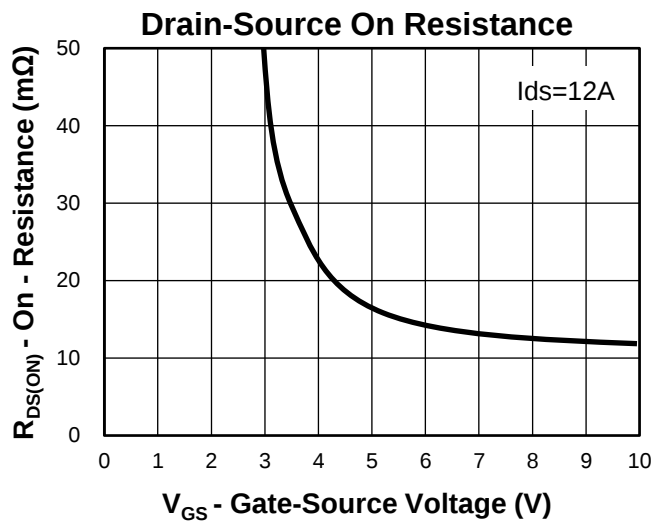
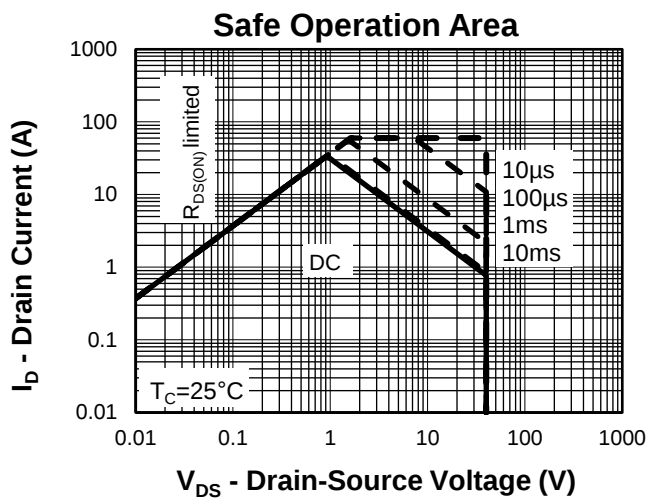
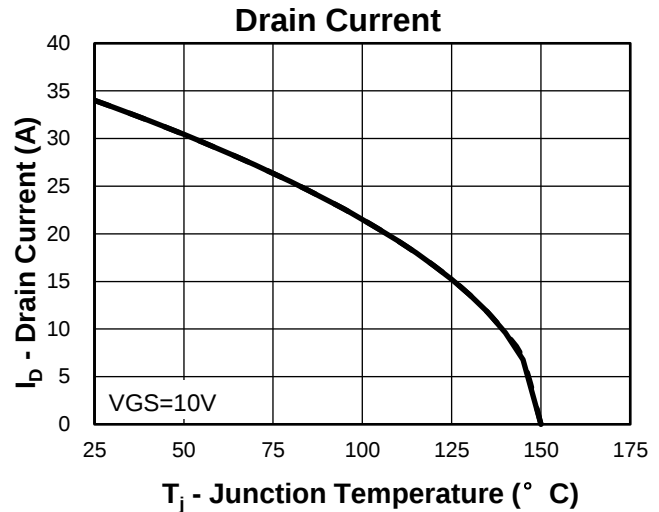
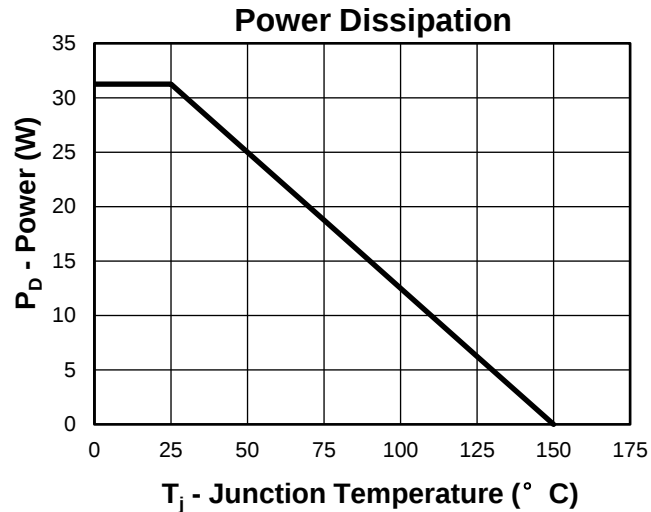


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

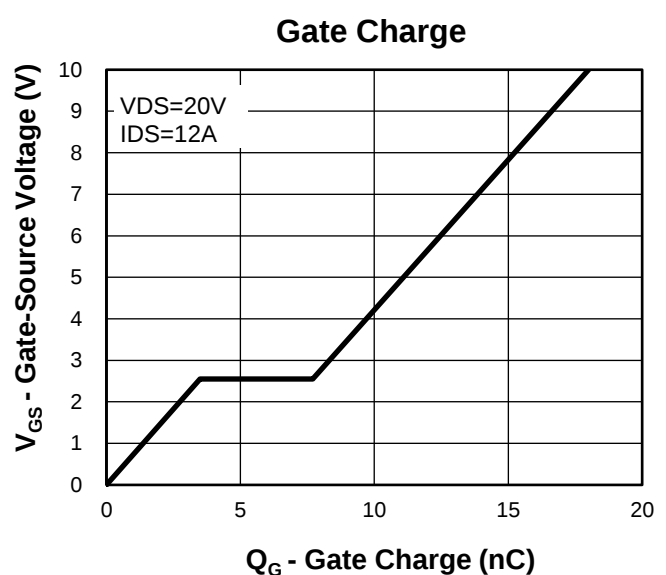
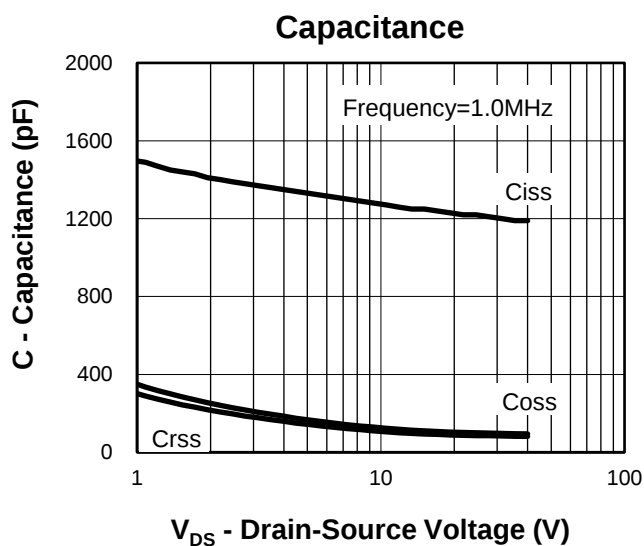
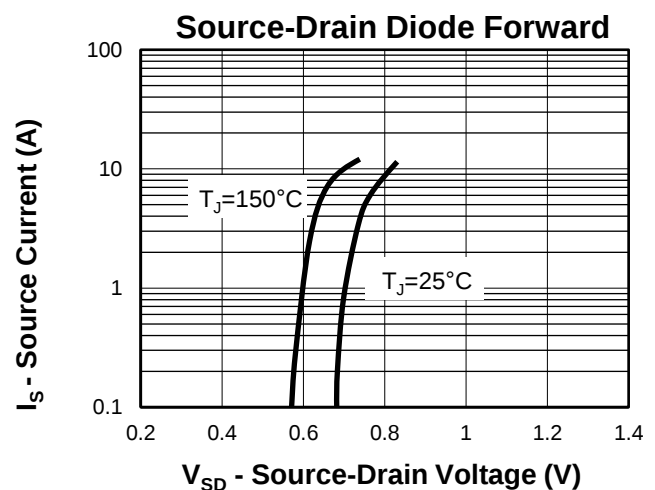
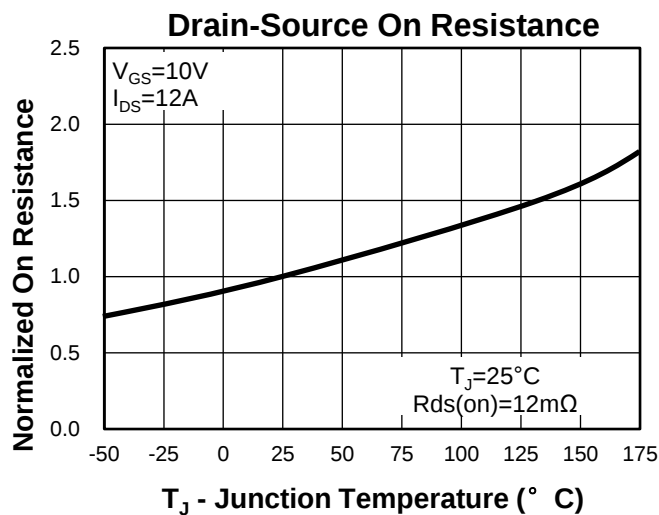
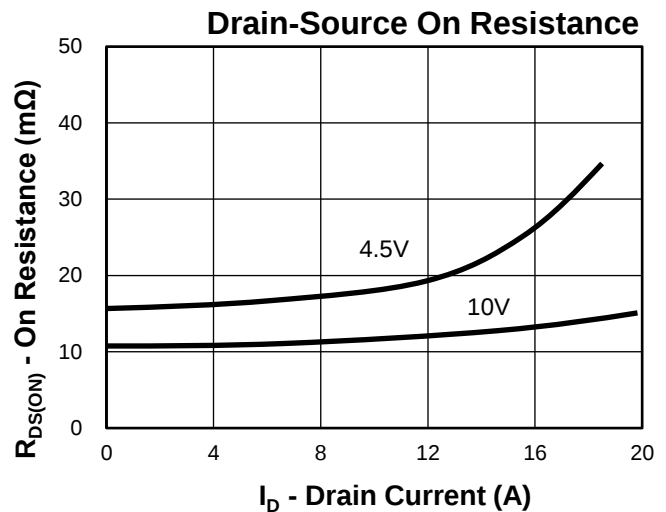
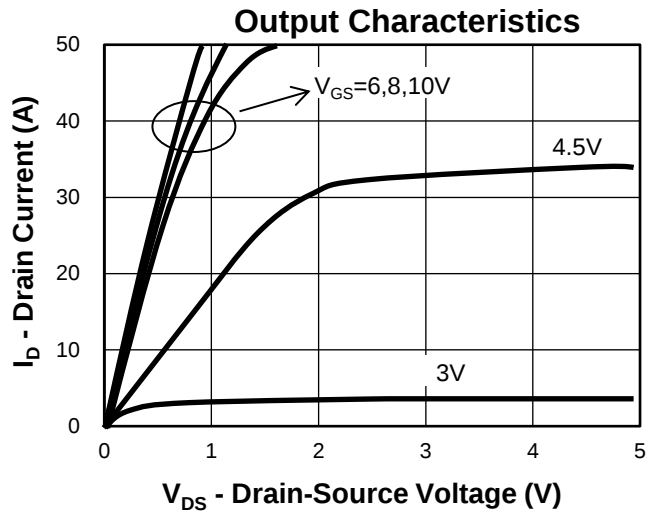
2nd Line: Part Number(4618)

3rd Line: Lot Number(YWWXXX)

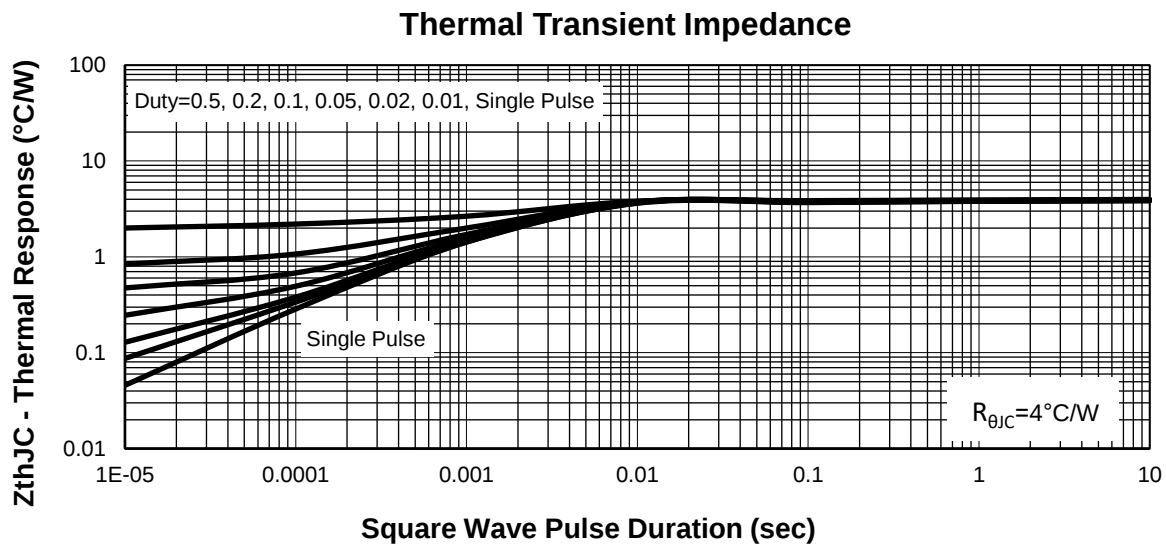
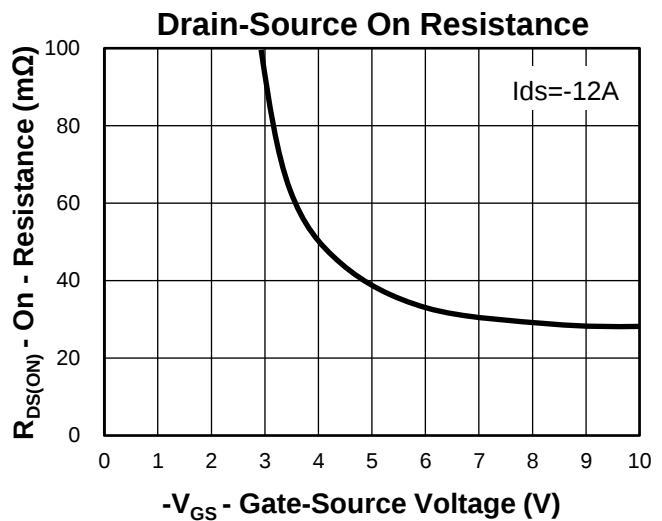
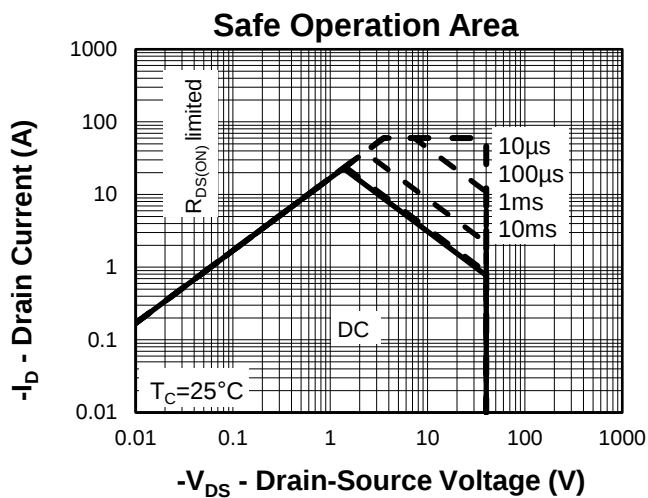
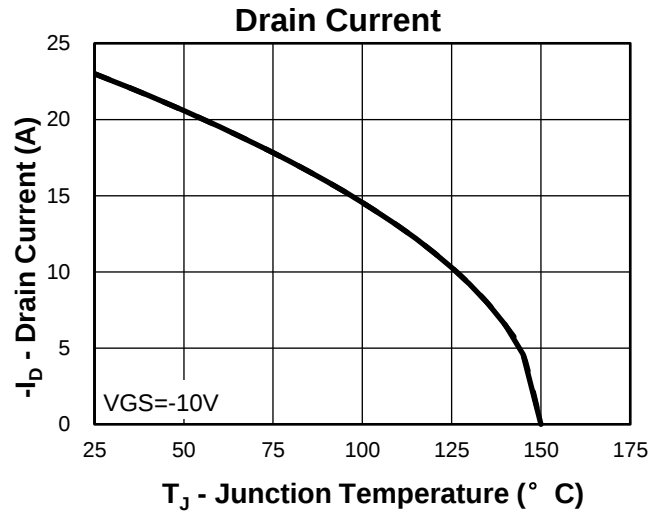
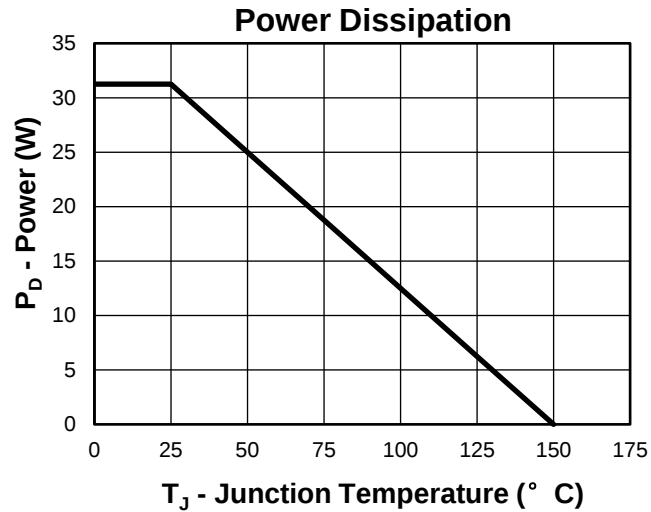
Typical Characteristics(N-Channel)



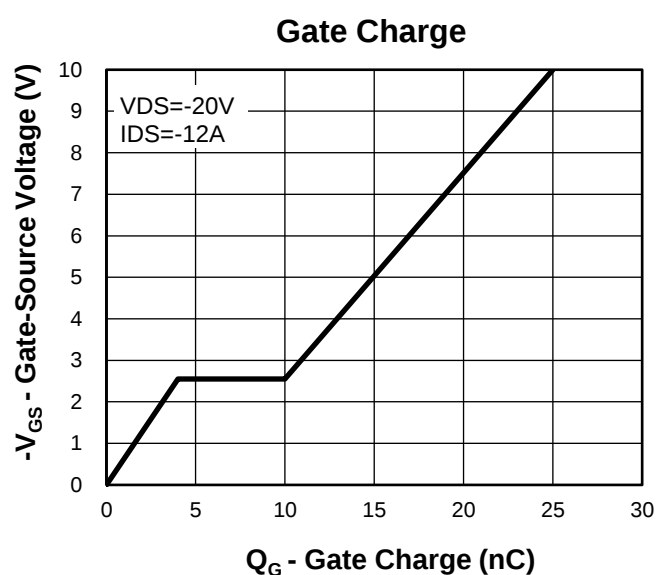
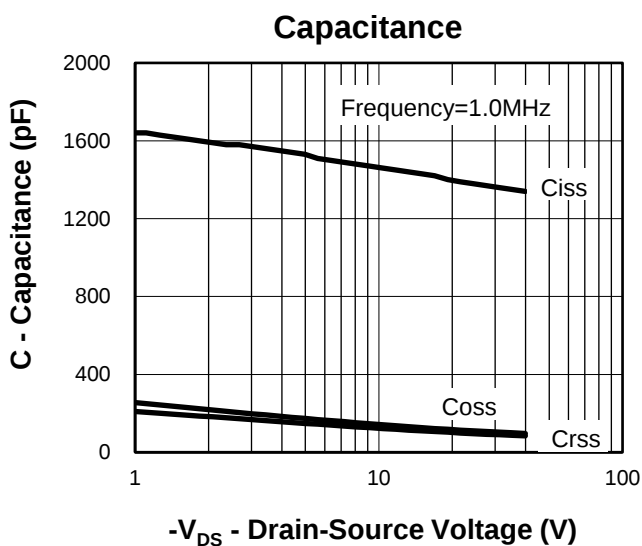
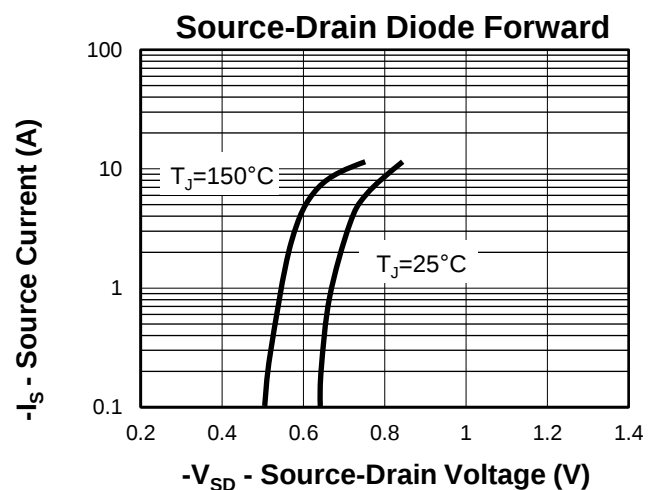
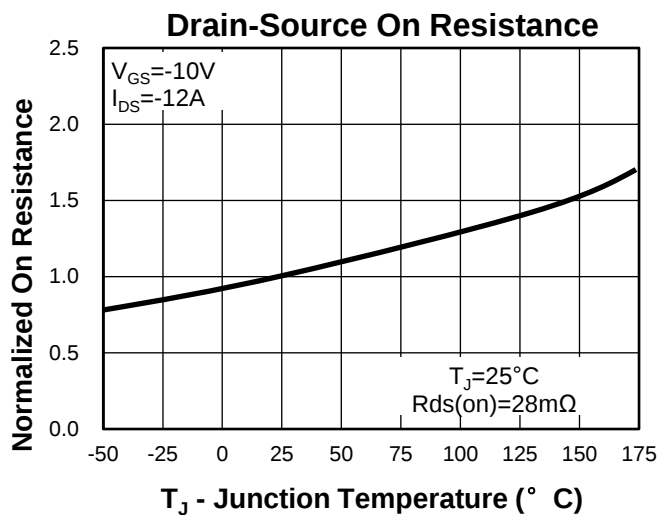
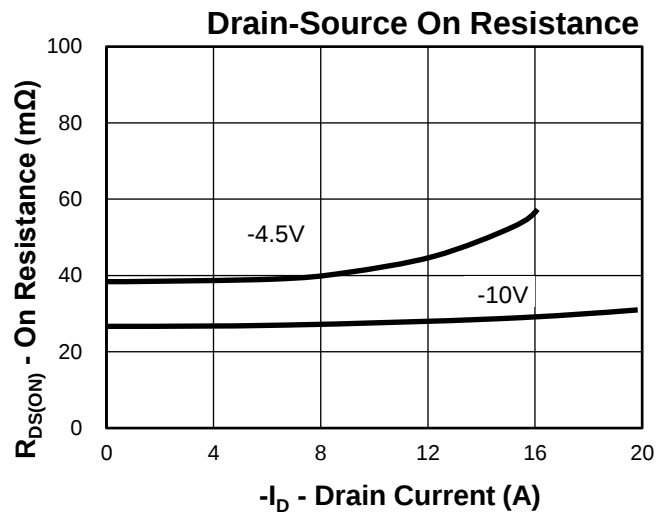
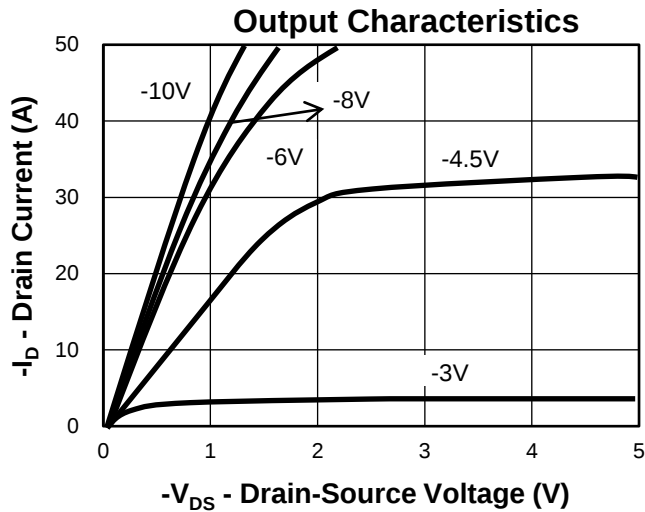
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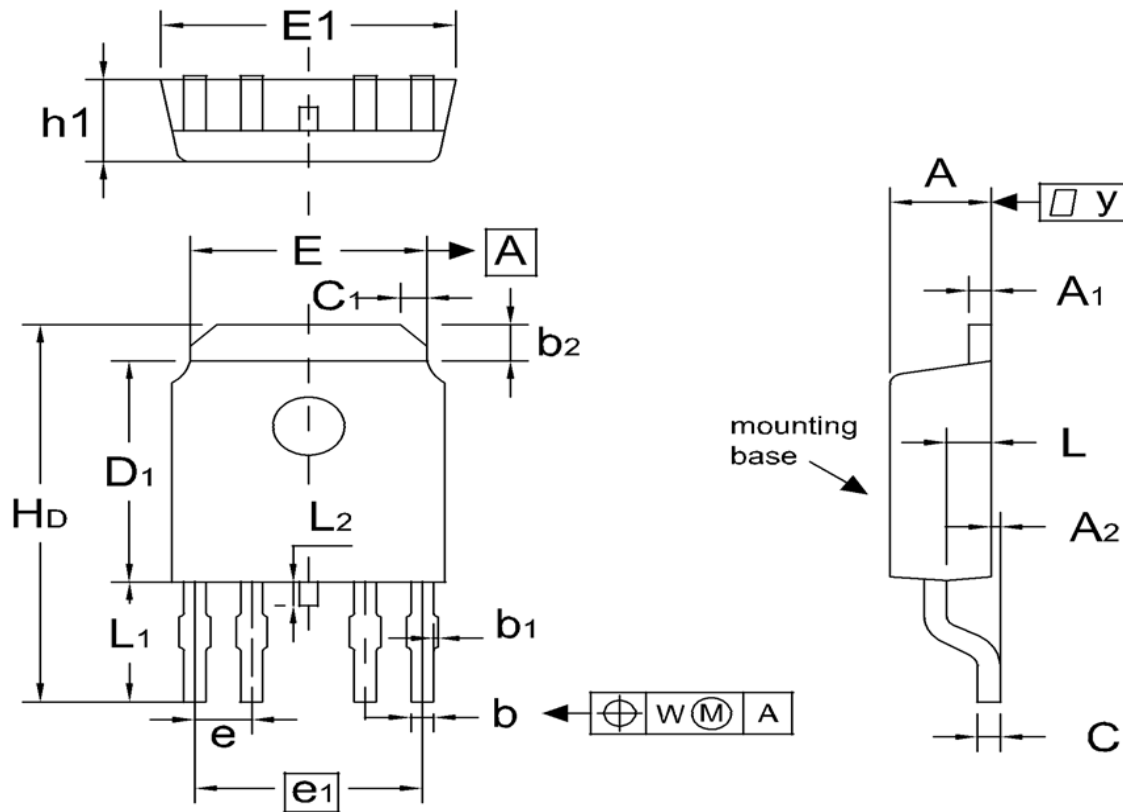


Typical Characteristics(P-Channel)



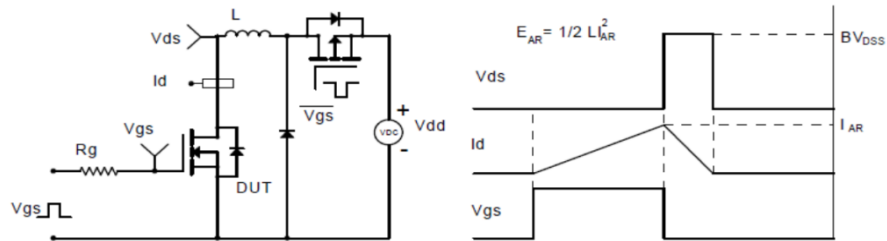
Typical Characteristics(P-Channel)



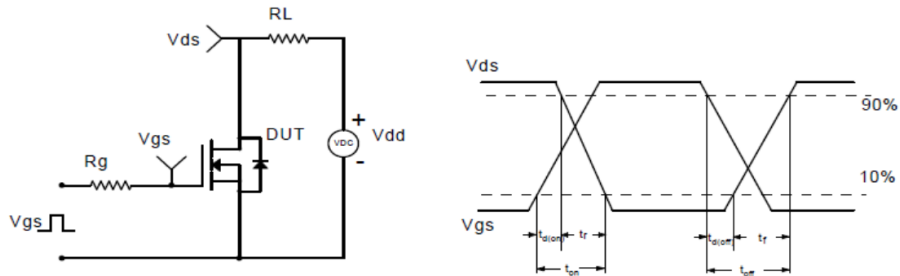
Package Information
TO-252-4L


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

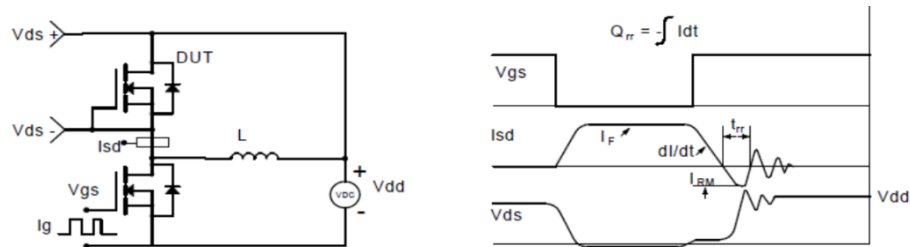
Avalanche Test Circuit and Waveforms(N-Channel)



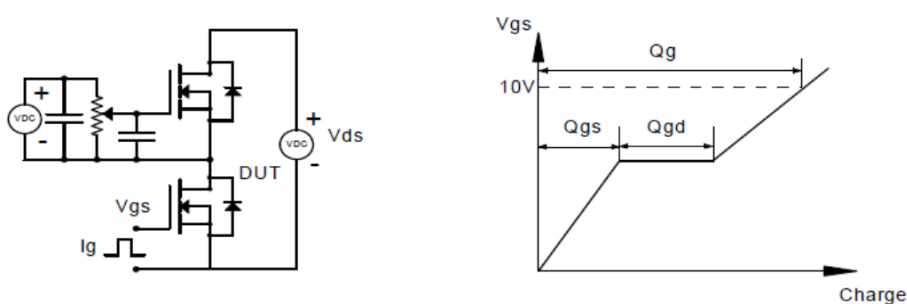
Switching Time Test Circuit and Waveforms(N-Channel)



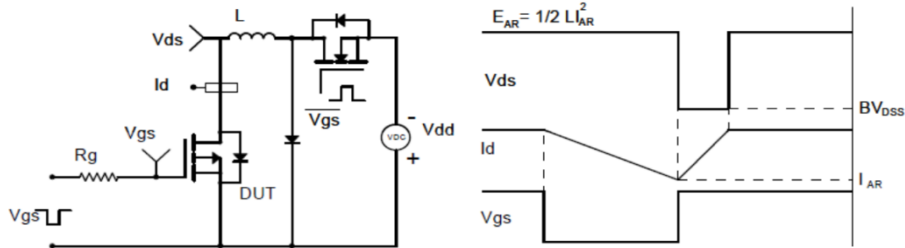
Diode Recovery Test Circuit and Waveforms(N-Channel)



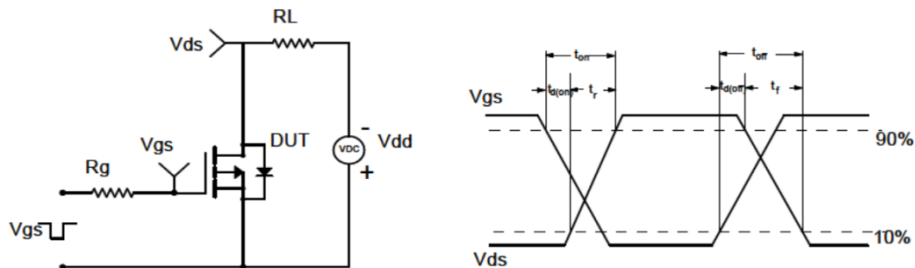
Gate Charge Test Circuit and Waveform(N-Channel)



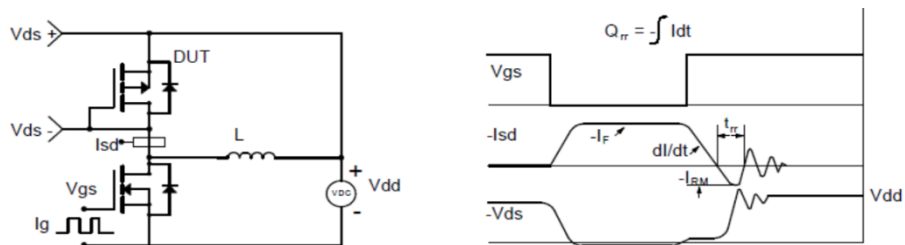
Avalanche Test Circuit and Waveforms(P-Channel)



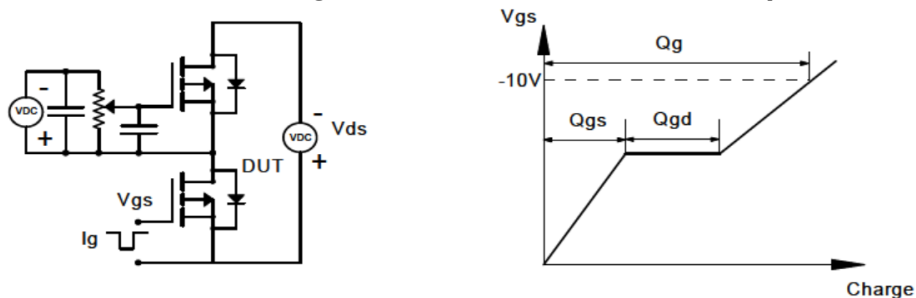
Switching Time Test Circuit and Waveforms(P-Channel)



Diode Recovery Test Circuit and Waveforms(P-Channel)



Gate Charge Test Circuit and Waveform(P-Channel)



Customer Service

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