

### Features

- N-Channel  
30V/38A,  
 $R_{DS(ON)} = 9m\Omega$  (Typ.) @  $V_{GS} = 10V$   
 $R_{DS(ON)} = 13m\Omega$  (Typ.) @  $V_{GS} = 4.5V$
- P-Channel  
-30V/-25A,  
 $R_{DS(ON)} = 18m\Omega$  (Typ.) @  $V_{GS} = -10V$   
 $R_{DS(ON)} = 28m\Omega$  (Typ.) @  $V_{GS} = -4.5V$
- Very low on-resistance
- Fast Switching

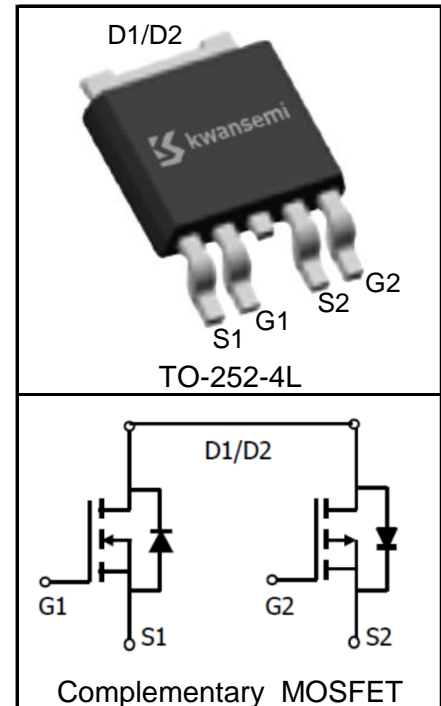
### Applications

- DC Fan
- Motor Drive Applications



Halogen-Free

### Pin Description



### Absolute Maximum Ratings

Symbol	Parameter	N-Channel	P-Channel	Unit	
<b>Common Ratings</b> ( $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)					
$V_{DSS}$	Drain-Source Voltage	30	-30	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	$\pm 20$	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	$T_C = 25^\circ\text{C}$	38	-25	A
<b>Mounted on Large Heat Sink</b>					
$I_{DP}^{①}$	300 $\mu\text{s}$ Pulse Drain Current Tested	$T_C = 25^\circ\text{C}$	60	-60	A
$I_D^{②}$	Continuous Drain Current ( $V_{GS} = \pm 10V$ )	$T_C = 25^\circ\text{C}$	38	-25	A
		$T_C = 100^\circ\text{C}$	24	-16	
$P_D$	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	30	30	W
		$T_C = 100^\circ\text{C}$	12	12	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4.2	4.2	$^\circ\text{C/W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient		100	100	$^\circ\text{C/W}$
<b>Drain-Source Avalanche Ratings</b>					
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed		16	25	mJ

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

Symbol	Parameter	Test Condition	KS3622DA4			Unit	
			Min.	Typ.	Max.		
<b>Static Characteristics</b>							
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	N	30		V	
		$V_{GS}=0V, I_{DS}=-250\mu A$	P	-30			
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	N		1	$\mu A$	
		$T_J=125^\circ C$			30		
		$V_{DS}=-30V, V_{GS}=0V$	P		-1		
		$T_J=125^\circ C$			-30		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	N	1.2	1.8	2.3	V
		$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	P	-1.2	-1.8	-2.3	
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	N			$\pm 100$	nA
		$V_{GS}=\pm 20V, V_{DS}=0V$	P			$\pm 100$	
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=10A$	N		9	12	m $\Omega$
		$V_{GS}=-10V, I_{DS}=-10A$	P		18	30	
		$V_{GS}=4.5V, I_{DS}=6A$	N		13	18	
		$V_{GS}=-4.5V, I_{DS}=-6A$	P		28	46	
<b>Diode Characteristics</b>							
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=10A, V_{GS}=0V$	N		0.85	1.2	V
		$I_{SD}=-10A, V_{GS}=0V$	P		-0.85	-1.2	
$t_{rr}$	Reverse Recovery Time	N-Channel $I_{SD}=10A, di_{SD}/dt=100A/\mu s$	N		12		ns
			P		21		
$Q_{rr}$	Reverse Recovery Charge	P-Channel $I_{SD}=-10A, di_{SD}/dt=100A/\mu s$	N		15		nC
			P		10		
<b>Dynamic Characteristics<sup>(6)</sup></b>							
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	N		2.8		$\Omega$
			P		6.3		
$C_{iss}$	Input Capacitance	N-Channel $V_{GS}=0V, V_{DS}=15V,$ Frequency=1.0MHz	N		900		pF
			P		1050		
$C_{oss}$	Output Capacitance	P-Channel $V_{GS}=0V, V_{DS}=-15V,$ Frequency=1.0MHz	N		95		
			P		120		
$C_{rss}$	Reverse Transfer Capacitance		N		60		
			P		85		

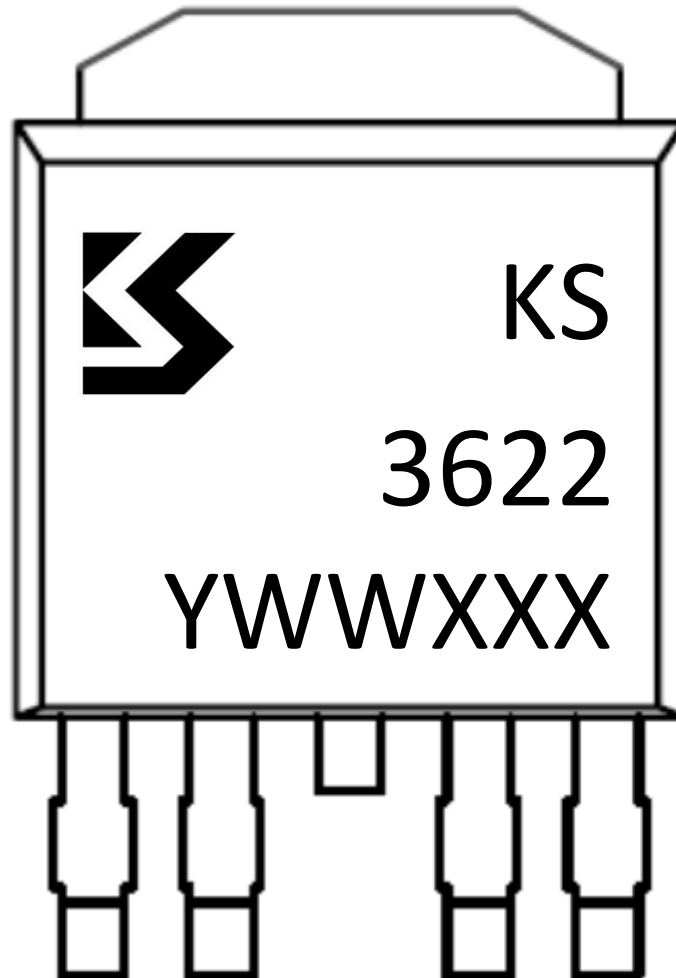
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS3622DA4			Unit	
			Min.	Typ.	Max.		
<b>Dynamic Characteristics</b> <sup>⑥</sup>							
$t_{d(ON)}$	Turn-on Delay Time	N-Channel $V_{DD}=15\text{V}, I_{DS}=10\text{A},$ $V_{GEN}=10\text{V}, R_G=3\Omega$  P-Channel $V_{DD}=-15\text{V}, I_{DS}=-10\text{A},$ $V_{GEN}= -10\text{V}, R_G=3\Omega$	N		7		ns
			P		8		
$t_r$	Turn-on Rise Time		N		12		
			P		11		
$t_{d(OFF)}$	Turn-off Delay Time		N		25		
			P		34		
$t_f$	Turn-off Fall Time		N		7		
			P		18		
<b>Gate Charge Characteristics</b> <sup>⑥</sup>							
$Q_g$	Total Gate Charge	N-Channel $V_{DS}=15\text{V}, V_{GS}=10\text{V},$ $I_{DS}=10\text{A}$  P-Channel $V_{DS}=-15\text{V}, V_{GS}= -10\text{V},$ $I_{DS}=-10\text{A}$	N		8		nC
			P		13		
$Q_{gs}$	Gate-Source Charge		N		2.6		
			P		3.5		
$Q_{gd}$	Gate-Drain Charge		N		3.3		
			P		4.1		

- 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:  $L = 0.5\text{mH}, R_G = 25\Omega, I_{AS} = 8\text{A}, V_{GS} = 10\text{V}$ , P-Chanel:  $L = 0.5\text{mH}, R_G = 25\Omega, I_{AS} = -10\text{A}, V_{GS} = -10\text{V}$ , 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
KS3622DA4	TO-252-4L	Tape&Reel	2500	13"	16mm

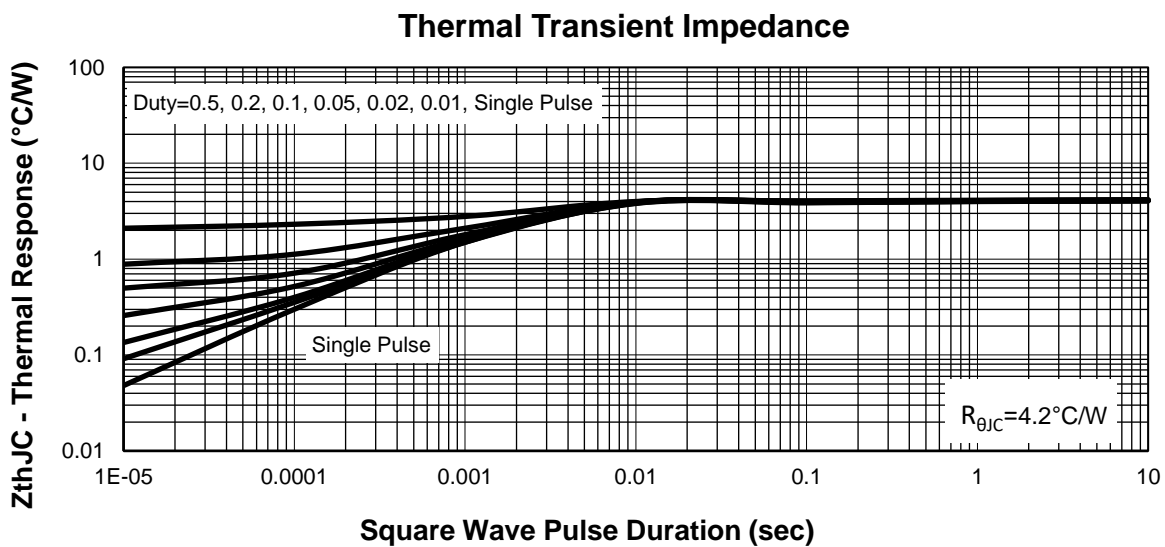
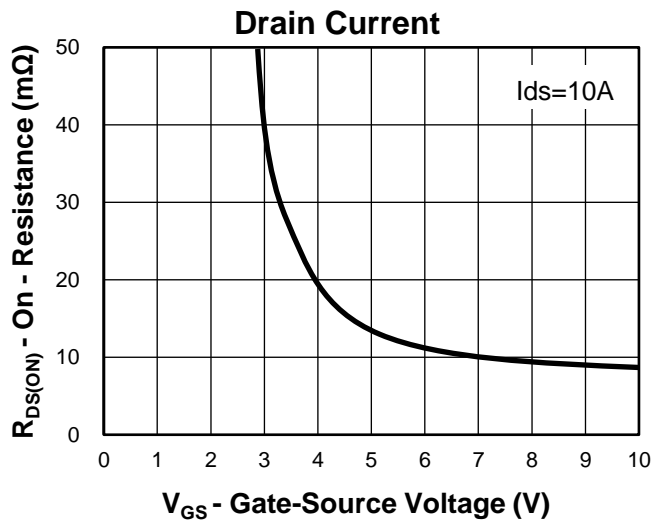
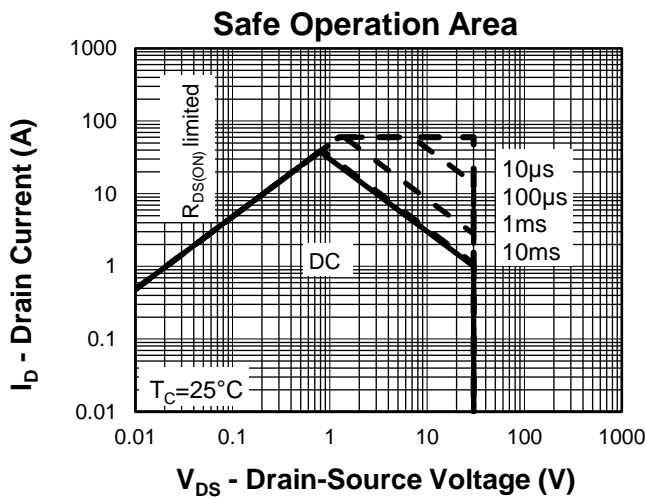
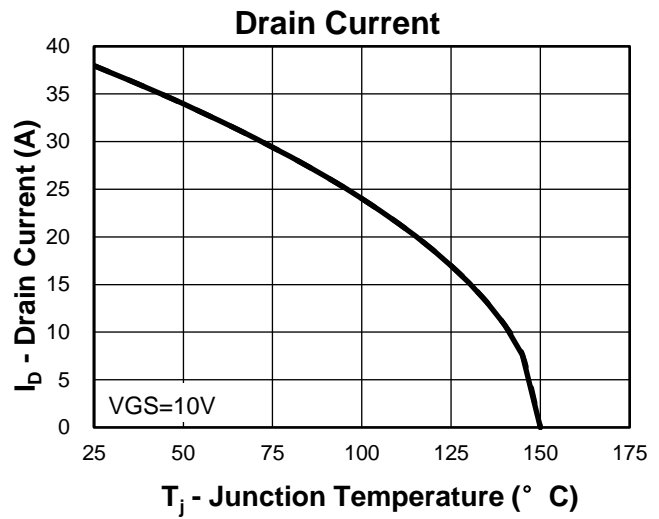
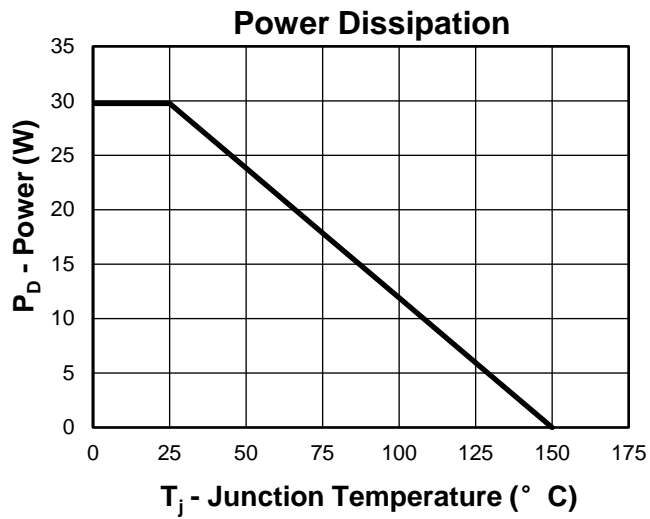


Y =Year,2017-A,2018-B,etc.

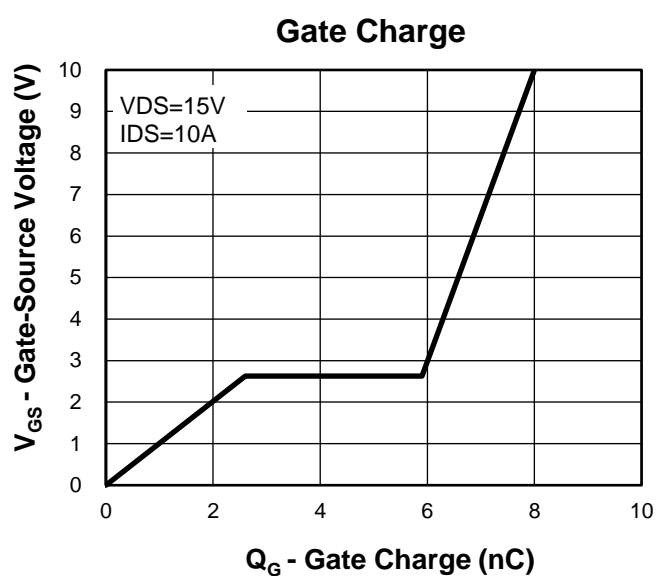
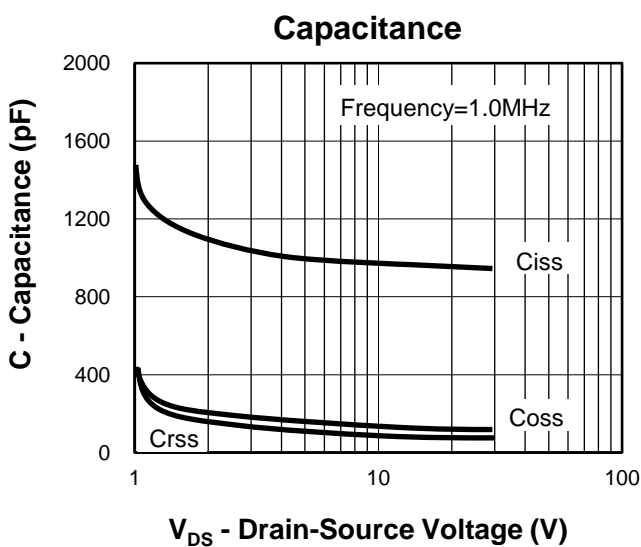
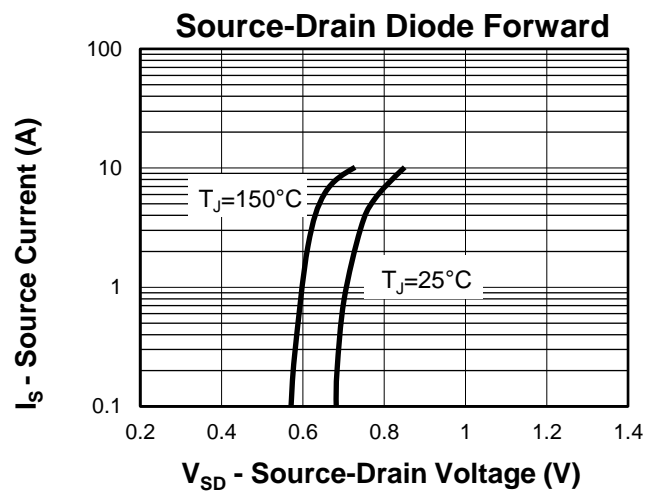
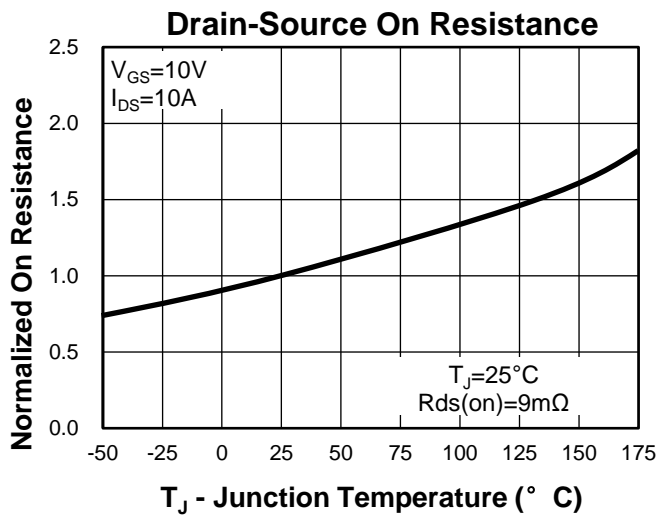
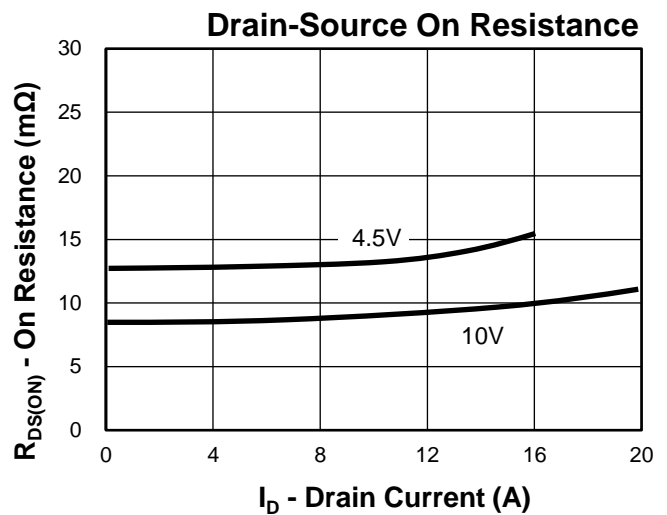
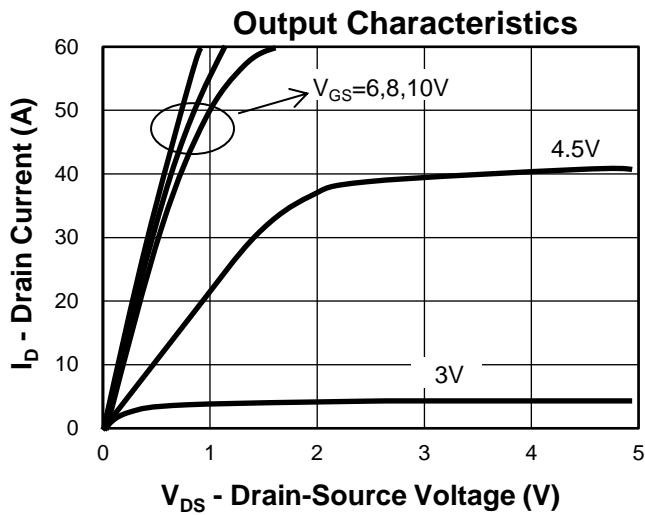
WW =Week.

XXX =Lot number.

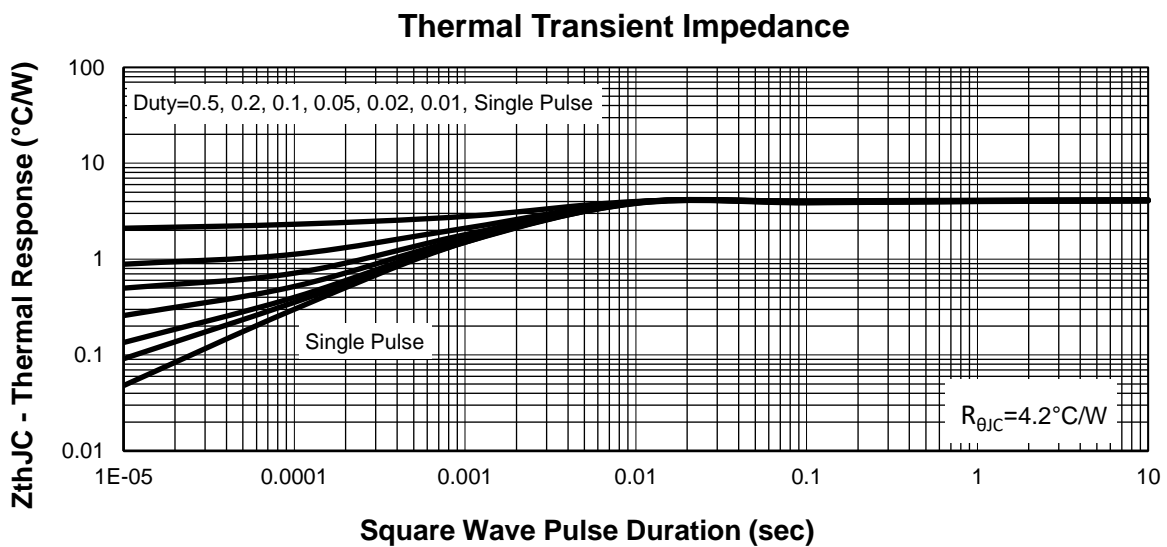
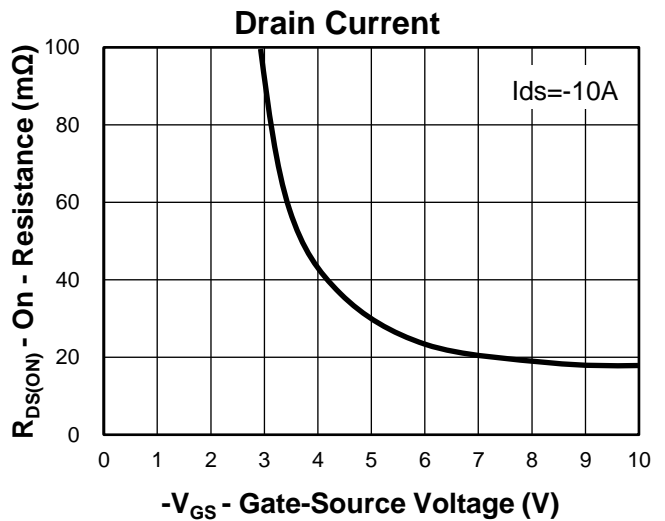
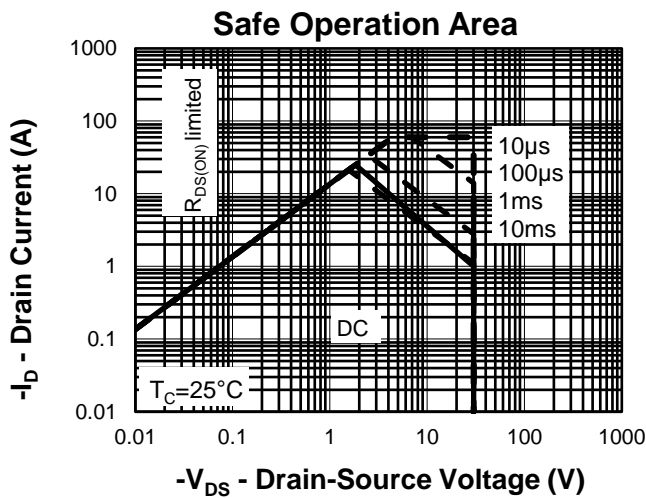
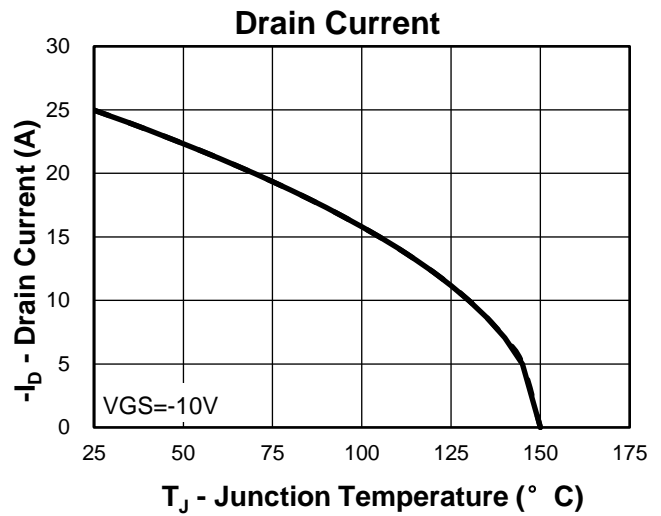
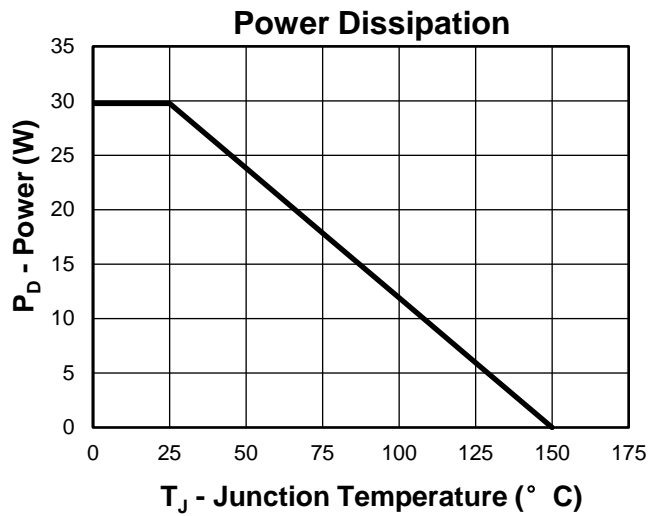
### Typical Characteristics(N-Channel)



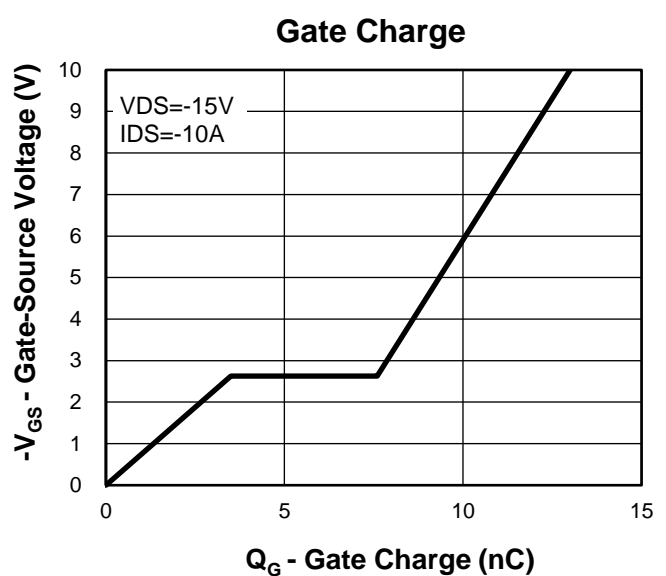
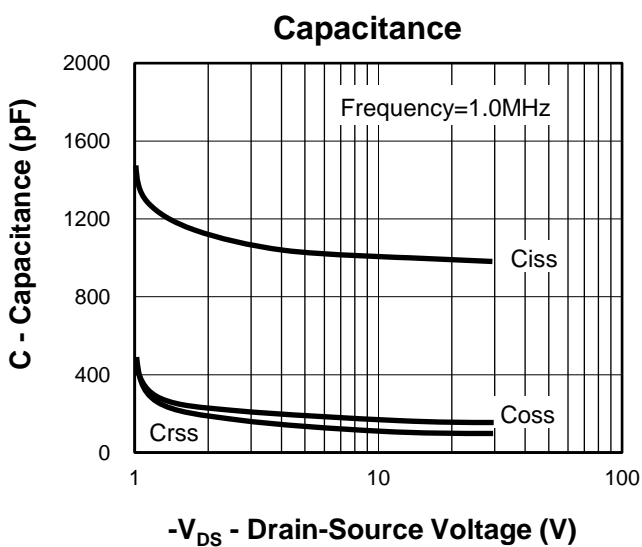
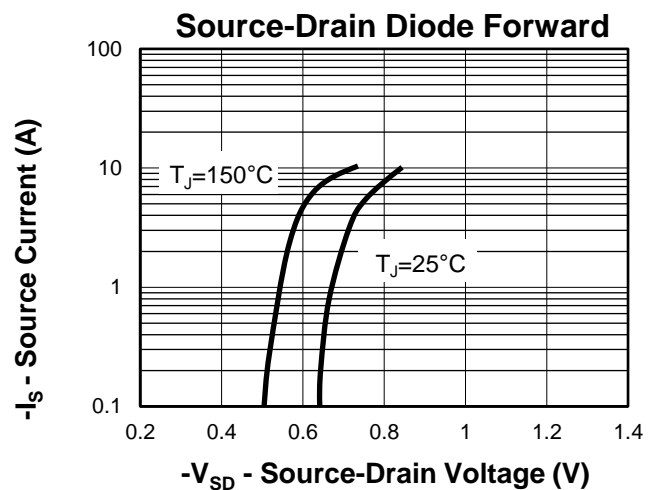
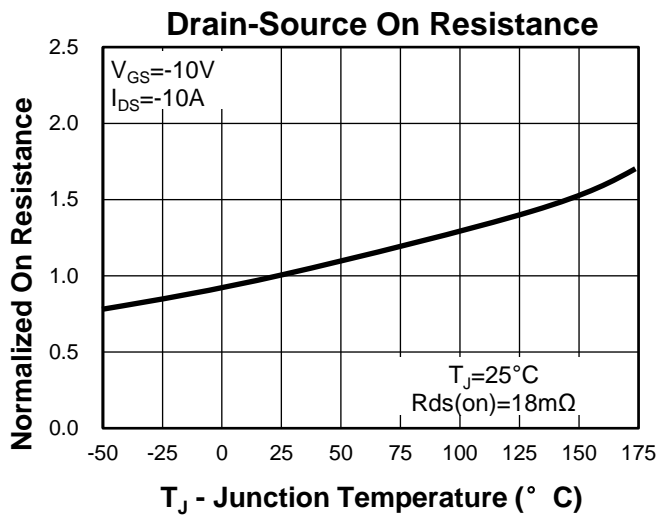
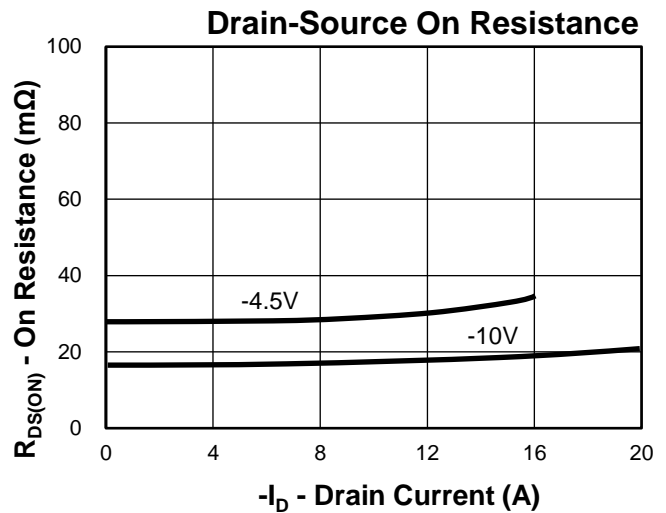
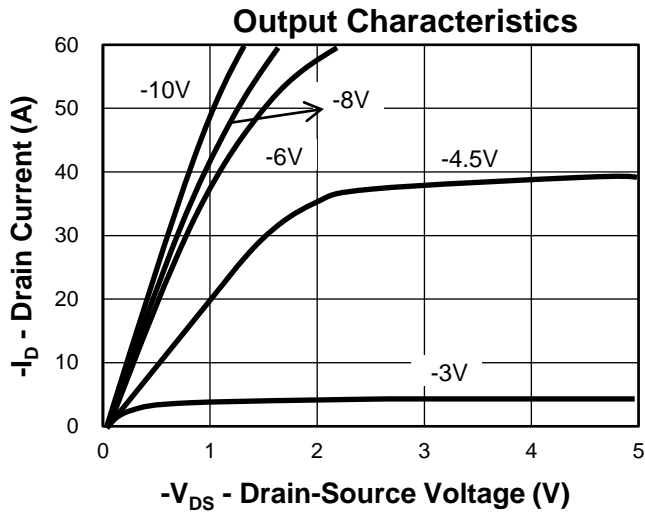
### Typical Characteristics(N-Channel)



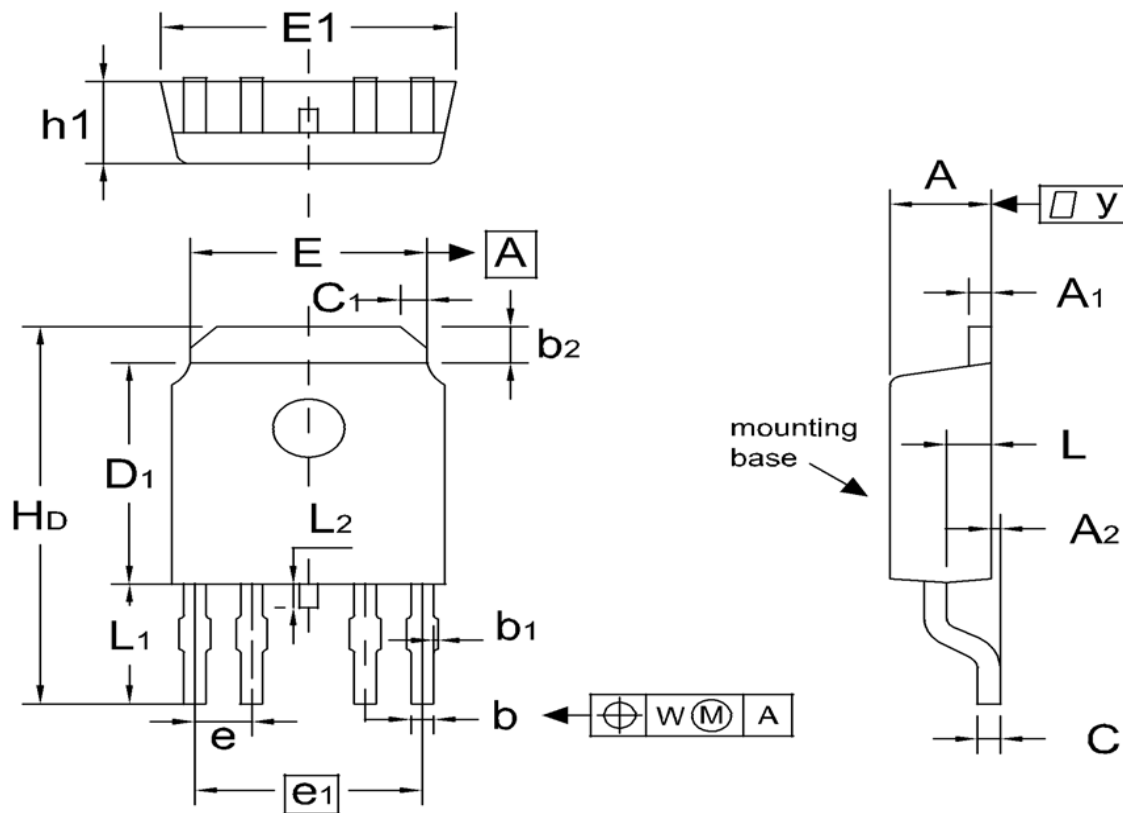
### Typical Characteristics(P-Channel)



Typical Characteristics(P-Channel)

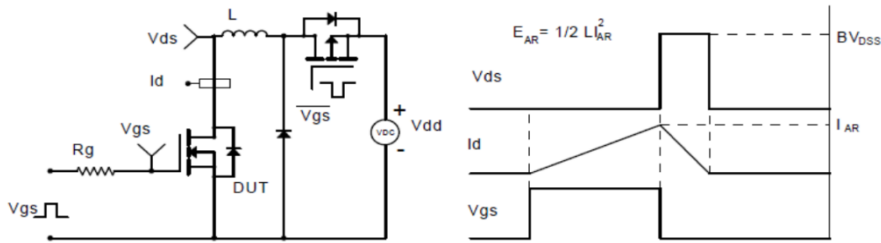




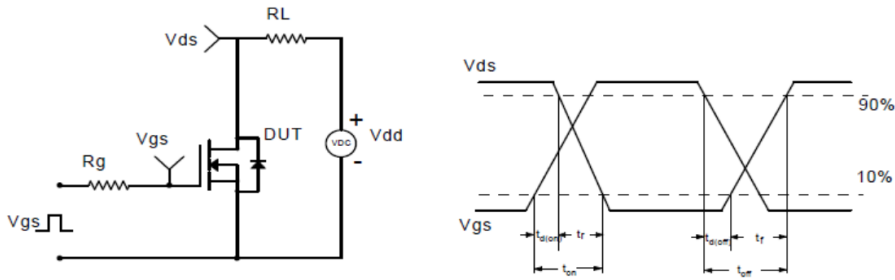
**Package Information**
**TO-252-4L**


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 <sub>D</sub>	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

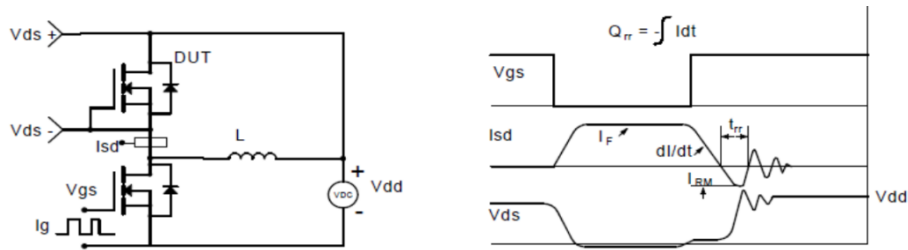
**Avalanche Test Circuit and Waveforms(N-Channel)**



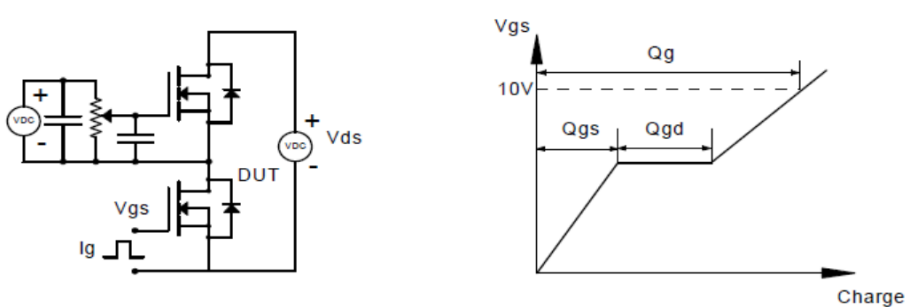
**Switching Time Test Circuit and Waveforms(N-Channel)**

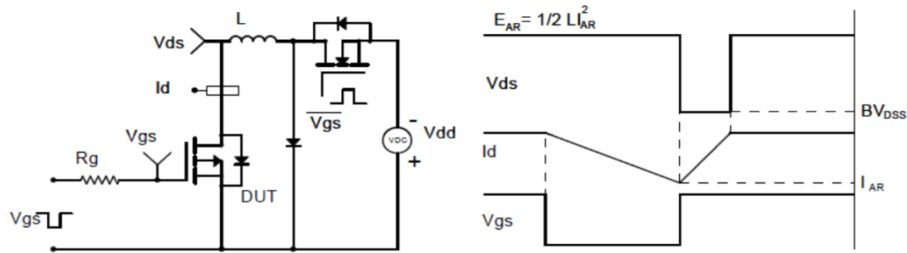
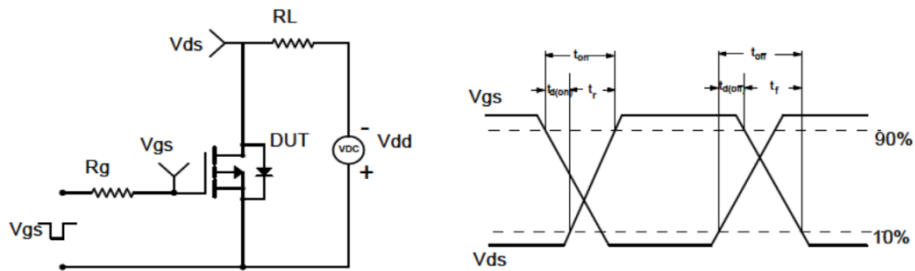
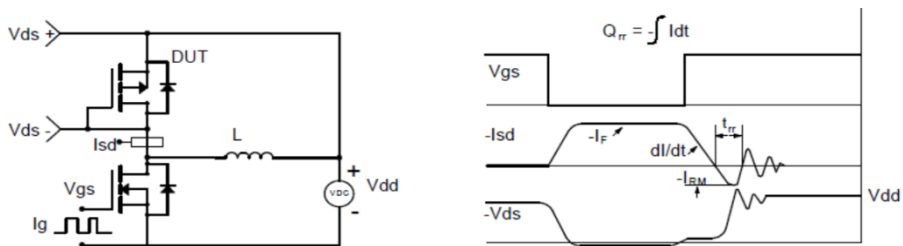
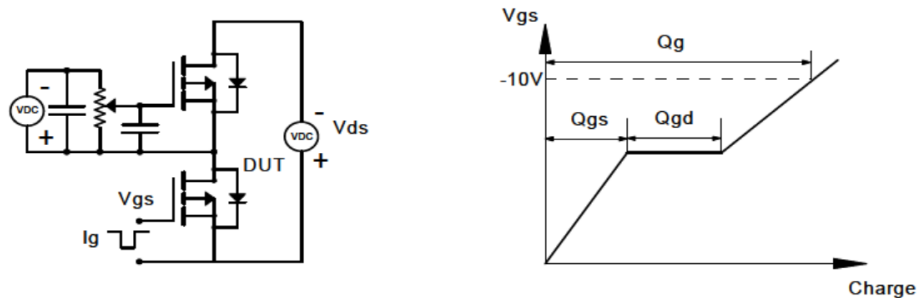


**Diode Recovery Test Circuit and Waveforms(N-Channel)**



**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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