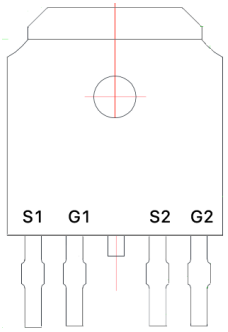
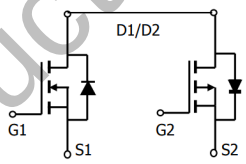
WGM6301D

TO-252-4L

RoHS COMPLIANT





Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ V_{DS} = 60V I_D =15 A
- ☐ $R_{DS(ON)}$ < 43mΩ @ V_{GS}=10V (Type: 28mΩ)
- ☐ V_{DS} = -60V I_D =-34 A
- ☐ $R_{DS(ON)}$ < 58 mΩ @ V_{GS}=10V (Type: 27mΩ)

Absolute Maximum Ratings* (Tc=25℃ Unless otherwise noted)

Symbol	Parameter	Rating		Units
		N-Ch	P-Ch	
V_{DS}	Drain-Source Voltage	60	-60	V
V_{GS}	Gate-Source Voltage	±20	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	15	-34	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	9	-15	A
I_{DM}	Pulsed Drain Current[2]	26	-46	A
EAS	Single Pulse Avalanche Energy[3]	16	26	mJ
I_{AS}	Avalanche Current	8.0	-8.0	A
P_D@T_C=25℃	Total Power Dissipation[4]	34.7	34.7	W
T_{STG}	Storage Temperature Range	-55 to 150	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	85		℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	5		℃/W
I_S	Continuous Source Current [1.5] (Diode Conduction)	13	-29	A

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH,I_{AS}=8 A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

WildGoose Semiconductor

Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition		Min	Typ	Max	Unit
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=10mA V_{GS}=0V,I_D=-10mA	N P	60 -60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250 uA V_{DS}=VGS,I_D=-250uA	N P	1.0 -1.0	1.7 -1.8	2.5 -2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V V_{DS}=0V,V_{GS}=±20V	N P			±100 ±100	nA
Zero Gate Voltage Drain Current	I_{DSS} T_J=25℃ T_J=55℃	V_{DS}=48V,V_{GS}=0V V_{DS}=-48V,V_{GS}=0V	N P			1 -1	uA
		V_{DS}=32V,V_{GS}=0V V_{DS}=-32V,V_{GS}=0V	N P			5 -5	
Drain-source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=8.0A V_{GS}=-10V,I_D=-5.0A	N P		28 27	43 58	mΩ
		V_{GS}=4.5V, I_D=5.0A V_{GS}=-4.5V,I_D=-3.0 A	N P		38 32	40 88	
Forward Tran Conductance	gfs	V_{DS}=5V,I_D=8.0A V_{DS}=-5V,I_D=-5.0A	N P		21 15		S
Diode Forward Voltage	V_{SD}	I_S=1.0A,V_{GS}=0V I_S=-1.0A,V_{GS}=0V	N P			1.2 -1.2	V
Dynamic							
Total Gate Charge	Q_g	**N-Channel** V_{DS}=48V,V_{GS}=4.5V I_D≡8.0A **P-Channel** V_{DS}=-48V,V_{GS}=-4.5V I_D≡-5.0A	N P		12.6 9.9		nC
Gate-Source Charge	Q_{gs}		N P		3.5 3.1		
Gate-Drain Charge	Q_{gd}		N P		6.3 3.0		
Turn-On Time	$t_{d(on)}$ tr	**N-Channel** V_{DS}=30V,R_G=3.3Ω I_D=8A,V_{GS}=10V **P-Channel** V_{DS}=-20V,R_G=3.3Ω I_D=-1A,R_{GS}=-10V	N P		8 9.7		nS
			N P		14.2 18		
Turn-Off Time	$t_{d(off)}$ tf		N P		24.6 45.8		
			N P		4.6 45.8		

WildGoose Semiconductor

TYPICAL CHARACTERICTICS (N MOS)

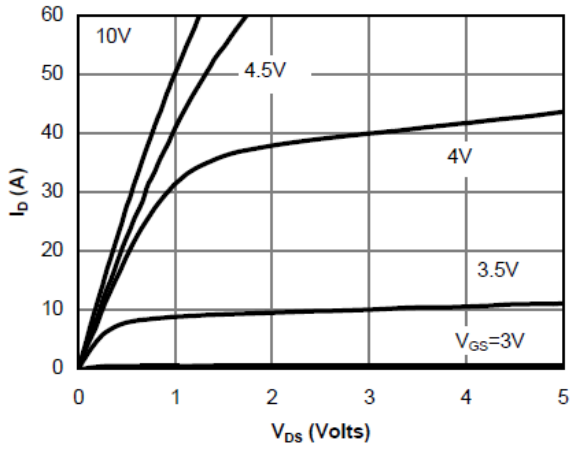


Fig 1: On-Region Characteristics (Note E)

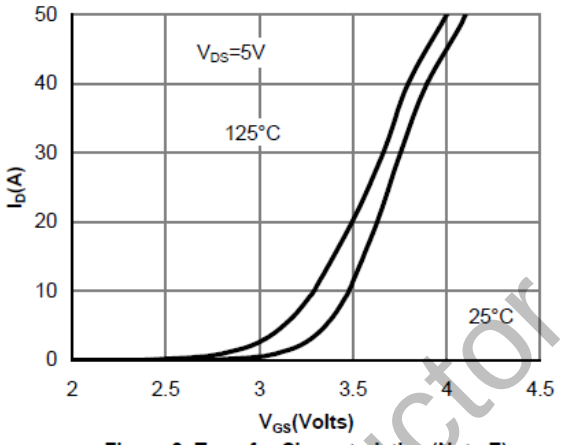


Figure 2: Transfer Characteristics (Note E)

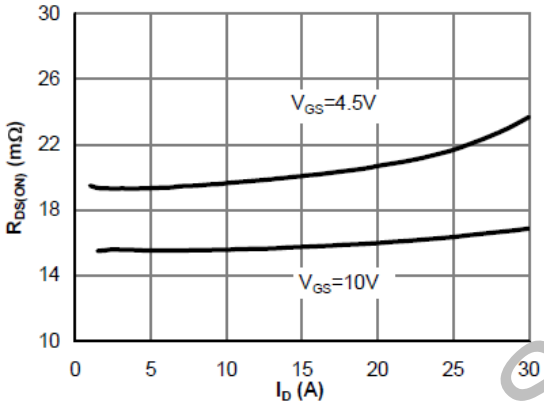


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

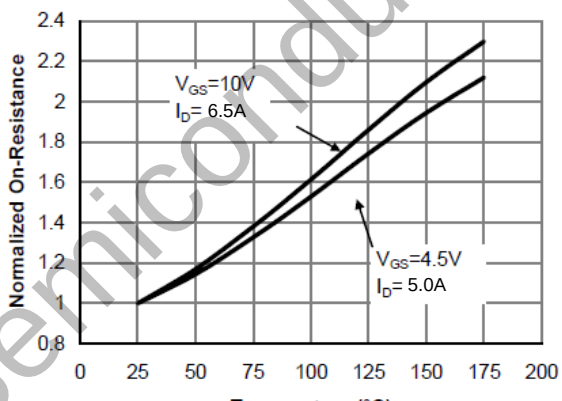


Figure 4: On-Resistance vs. Junction Temperature (Note E)

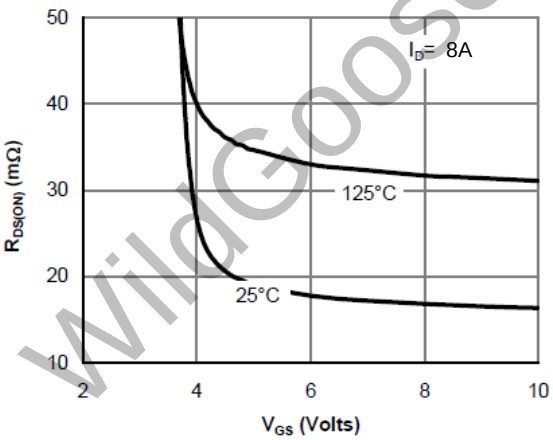


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

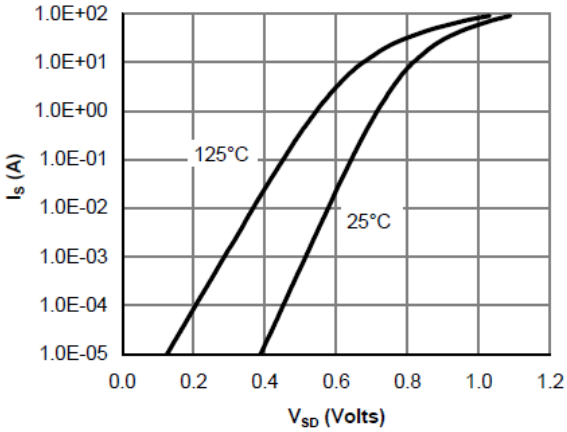


Figure 6: Body-Diode Characteristics (Note E)

WildGoose Semiconductor

TYPICAL CHARACTERICTICS (N MOS)

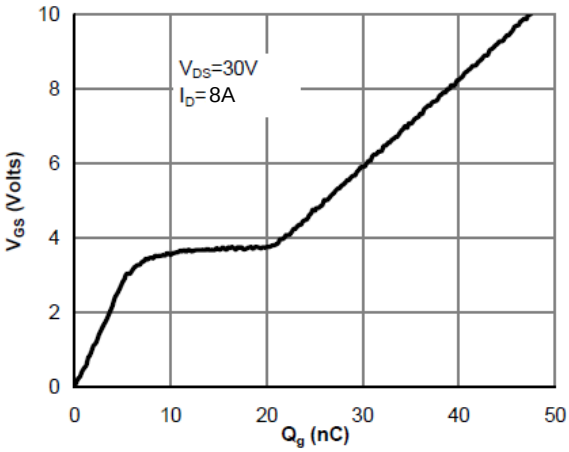


Figure 7: Gate-Charge Characteristics

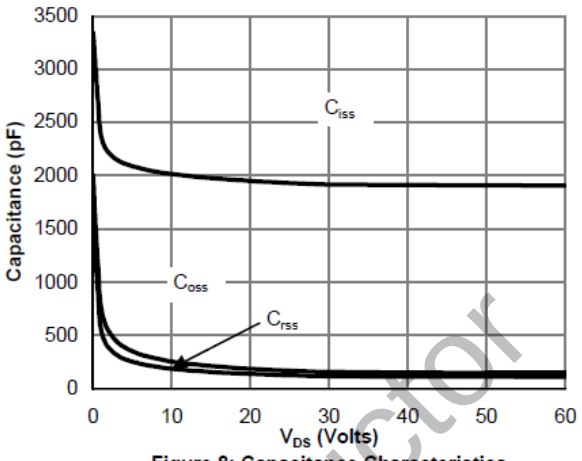


Figure 8: Capacitance Characteristics

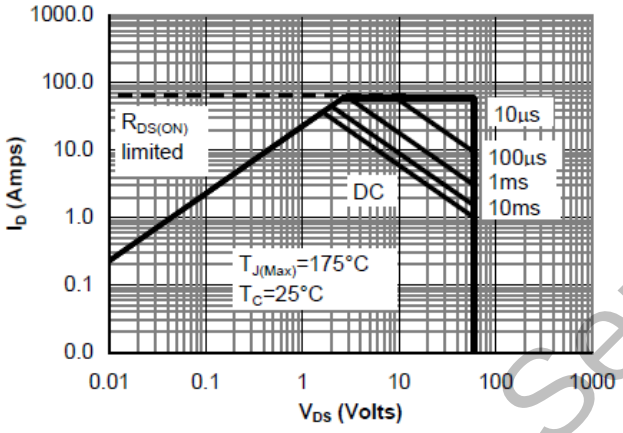


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

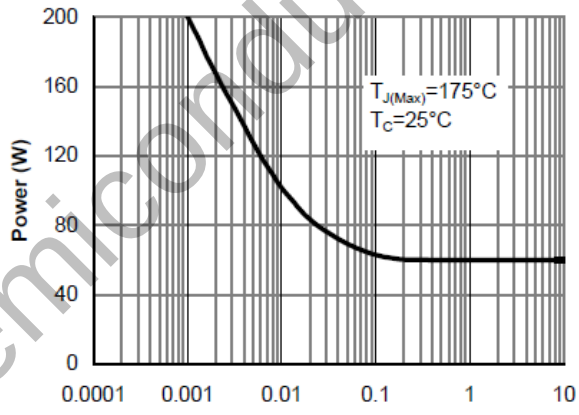


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

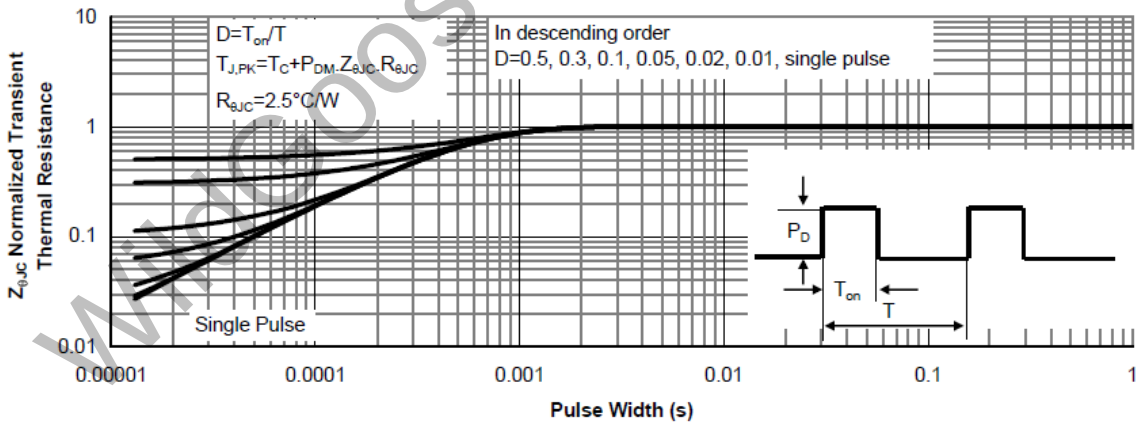


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

WildGoose Semiconductor

TYPICAL CHARACTERICTICS (P MOS)

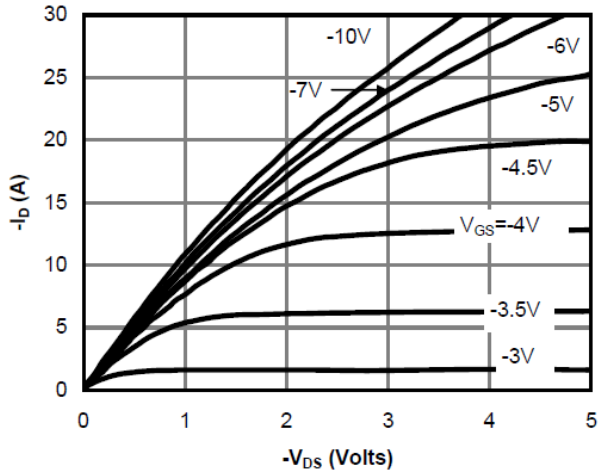


Fig 1: On-Region Characteristics

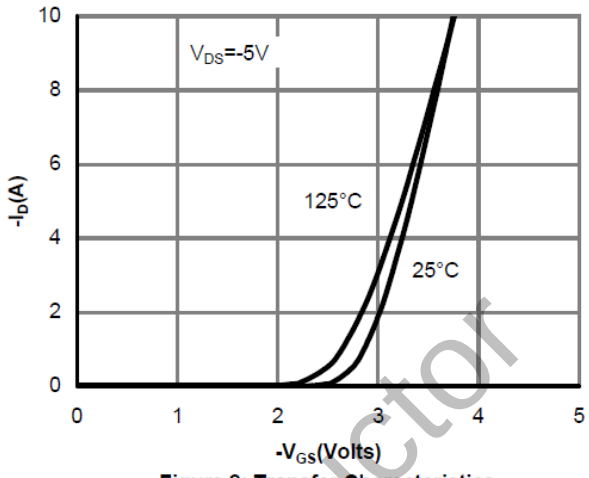


Figure 2: Transfer Characteristics

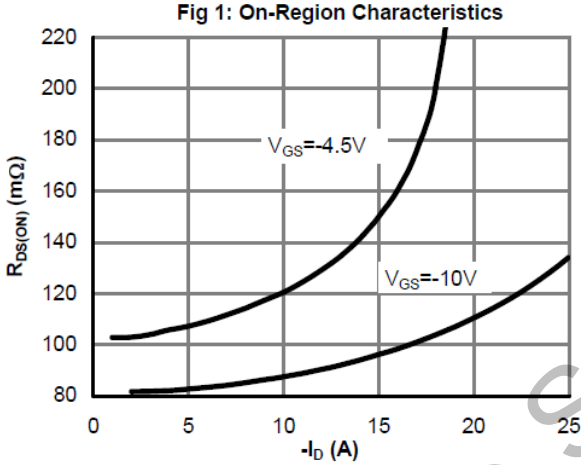


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

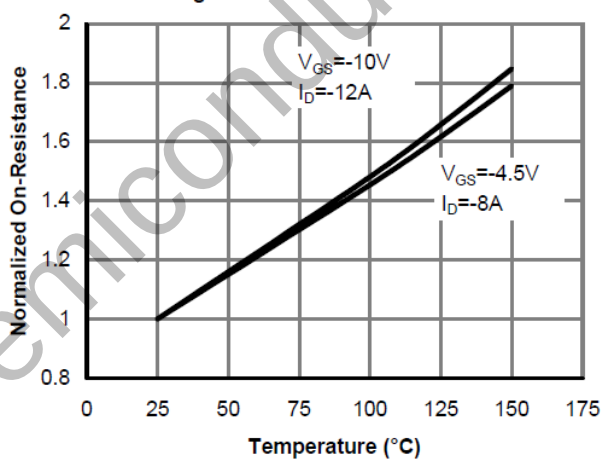


Figure 4: On-Resistance vs. Junction Temperature

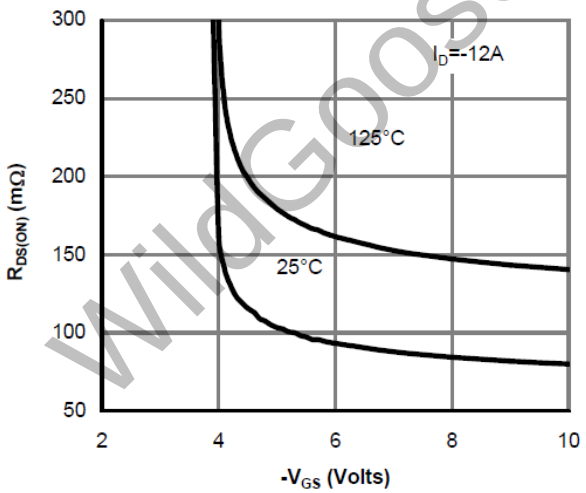


Figure 5: On-Resistance vs. Gate-Source Voltage

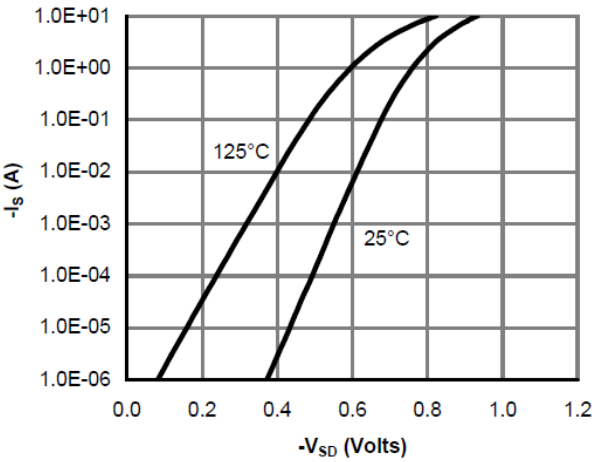


Figure 6: Body-Diode Characteristics

WildGoose Semiconductor

TYPICAL CHARACTERICTICS (P MOS)

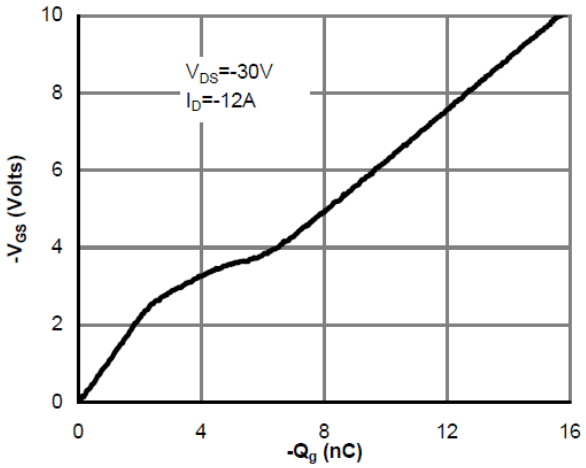


Figure 7: Gate-Charge Characteristics

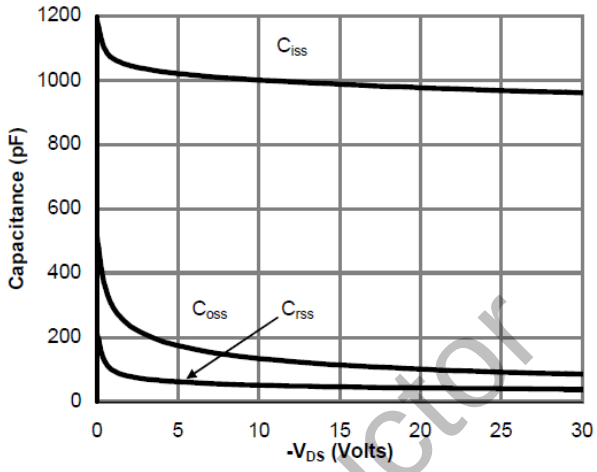


Figure 8: Capacitance Characteristics

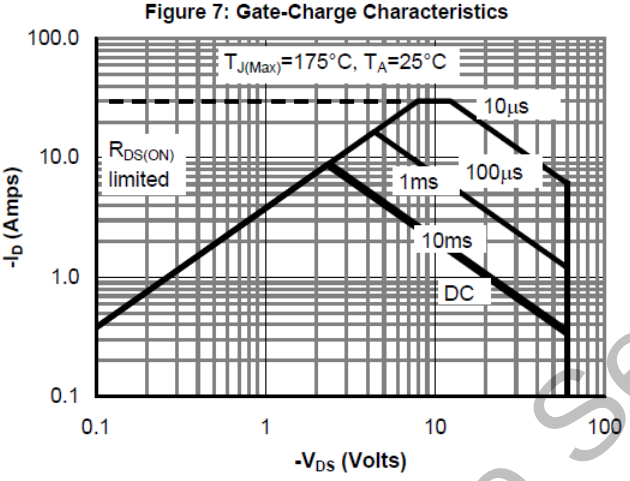


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

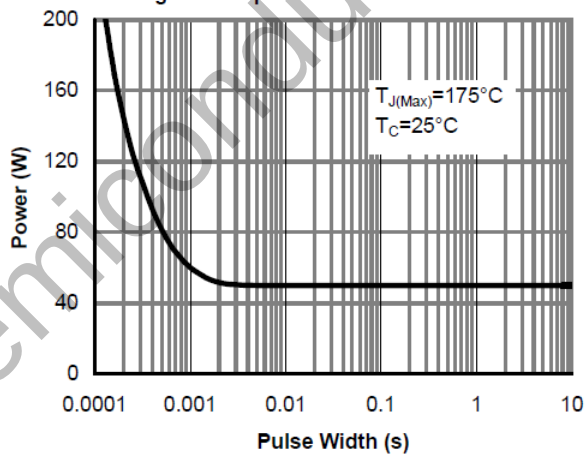


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

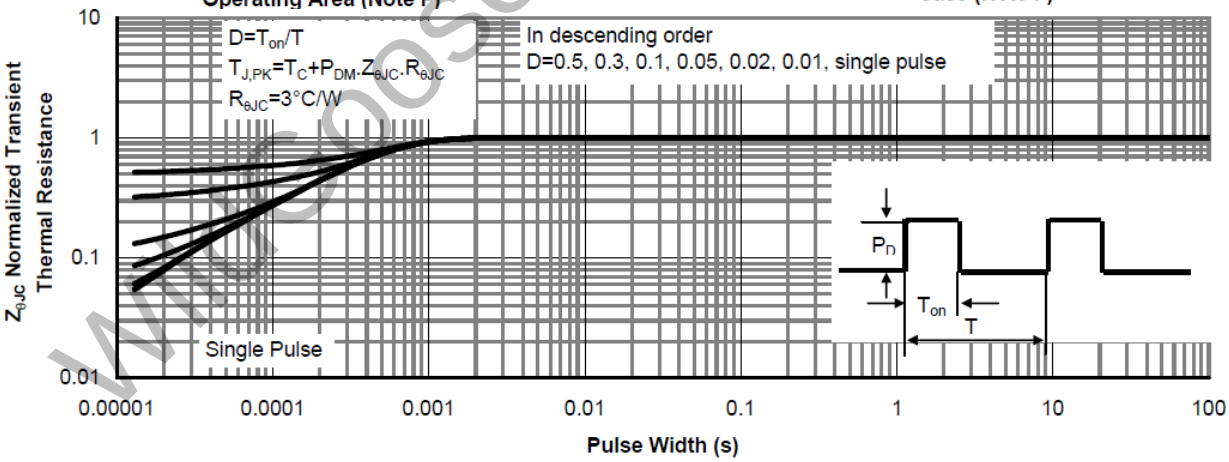


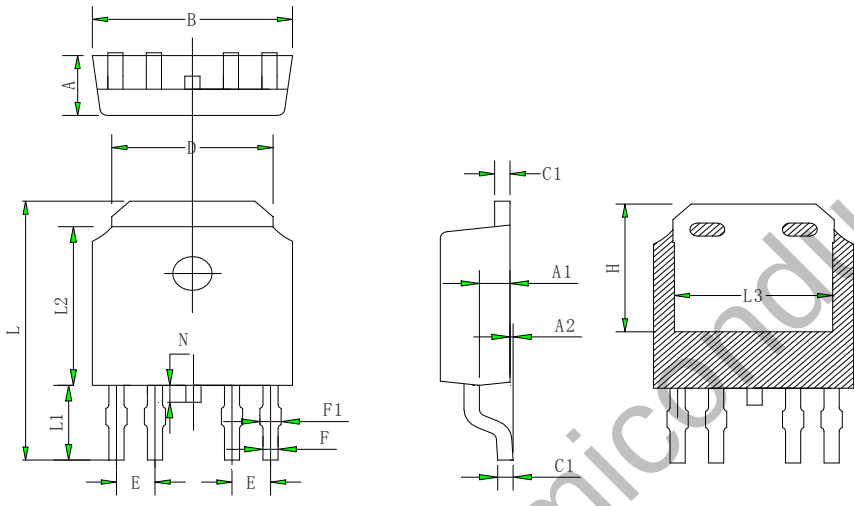
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

WildGoose Semiconductor

Package Dimension

TO-252-4L

Unit: mm



Symbol	Min	Typ	Max
A	2.20	2.30	2.40
A1	0.91	1.01	1.11
A2	0.05	0.15	0.25
B	6.45	6.60	6.75
C	0.45	0.50	0.58
C1	0.45	0.50	0.58
D	5.12	5.32	5.52
E		1.27 TYP	
F1	0.45	0.60	0.75
F	0.40	0.50	0.60
H	4.70	4.90	5.10
L	9.70	10.00	10.20
L1	2.6	2.8	3.0
L2	5.95	6.10	6.25
L3	5.00	5.20	5.40`
N	0.45	0.65	0.85

WildGoose Semiconductor