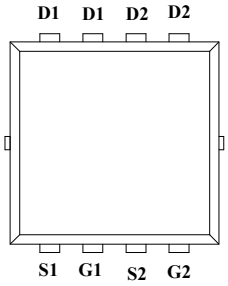
WGEM816V30

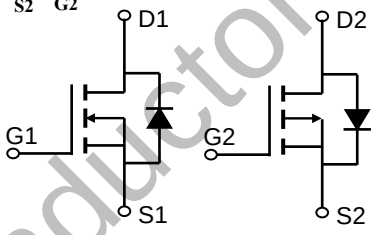
Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ V_{DS} = 30V I_D =25 A
- ☐ $R_{DS(ON)}$ < 15mΩ @ V_{GS}=4.5V(Type: 11mΩ)
- ☐ V_{DS} = -30V I_D =-25A
- ☐ $R_{DS(ON)}$ < 22 mΩ @ V_{GS}=4.5V(Type: 19mΩ)

PDFN3X3

RoHS COMPLIANT





Schematic Diagram

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

Symbol	Parameter	Rating		Units
		N-Ch	P-Ch	
V_{DS}	Drain-Source Voltage	30	-30	V
V_{GS}	Gate-Source Voltage	±12	±12	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	25	-25	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	18	-18	A
I_{DM}	Pulsed Drain Current[2]	35	-35	A
EAS	Single Pulse Avalanche Energy[3]	50	50	mJ
I_{AS}	Avalanche Current	15	-15	A
P_D@T_C=25℃	Total Power Dissipation[4]	15	15	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]	52		℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	3.6		℃/W

WildGoose Semiconductor

N-Channel **Electrical Characteristics (T_C=25℃unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=30V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.0	1.6	2.5	V
gFS	Forward Transconductance	VDS=5V,ID=3A	--	11	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10 V, ID=20A	--	8.3	10	mΩ
		VGS=4.5V, ID=10A	--	11	15	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=10V,VGS=0V, F=1MHZ	--	1120	--	pF
Coss	Output Capacitance		--	150	--	pF
Crss	Reverse Transfer Capacitance		--	105	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	2.6	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=4.5V,VDS=10V, ID=4A,RGEN=3.3Ω	--	4.0	--	nS
tr	Turn-on Rise Time		--	25	--	nS
td(off)	Turn-Off Delay Time		--	32	--	nS
tf	Turn-Off Fall Time		--	26	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=10V, ID=2A	--	23	--	nC
Qgs	Gate-Source Charge		--	2.5	--	nC
Qgd	Gate-Drain Charge		--	4.2	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	25	A
VSD	Forward on Voltage	VGS=0V,IS=4A	--	--	1.2	V
trr	Reverse Recovery Time	IF=4A , dI/dt=100A/μs , TJ=25℃	--	18	--	ns
Qrr	Reverse Recovery Charge		--	9.5	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25℃,VDD=30V,Vgs=10V,ID=15A,L=0.5mH,RG=25ohm

WildGoose Semiconductor

P-Channel **Electrical Characteristics (T_C=25℃unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-30V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.0	-1.6	-2.5	V
gFS	Forward Transconductance	VDS=-10V,ID=-2A	--	7	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10 V, ID=-10 A	--	15.3	17	mΩ
		VGS=-4.5V, ID=-5A	--	19.5	22	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-10V,VGS=0V, F=1MHZ	--	2544	--	pF
Coss	Output Capacitance		--	270	--	pF
Crss	Reverse Transfer Capacitance		--	190	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	7.6	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-4.5V,VDS=-10V, ID=-3A,RGEN=1Ω	--	7	--	nS
tr	Turn-on Rise Time		--	25	--	nS
td(off)	Turn-Off Delay Time		--	74	--	nS
tf	Turn-Off Fall Time		--	10	--	nS
Qg	Total Gate Charge	VGS=-4.5V, VDS=-10V, ID=-2A	--	44	--	nC
Qgs	Gate-Source Charge		--	26	--	nC
Qgd	Gate-Drain Charge		--	31	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-25	A
VSD	Forward on Voltage	VGS=0V,IS=-3A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-3A , dI/dt=100A/μs , TJ=25℃	--	11	--	ns
Qrr	Reverse Recovery Charge		--	4	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature Notes

3.EAS condition: TJ=25℃,VDD=-30V,Vgs=-10V,ID=-15A, L=0.5mH,RG=25ohm

WildGoose Semiconductor

N-Channel Typical Characteristics

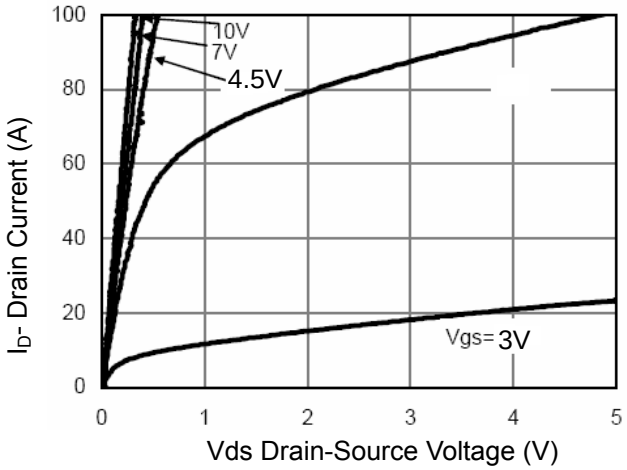


Figure 1 Output Characteristics

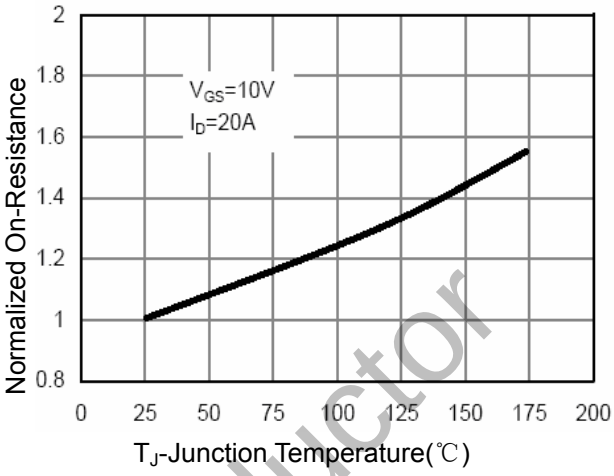


Figure 4 Rdson-Junction Temperature

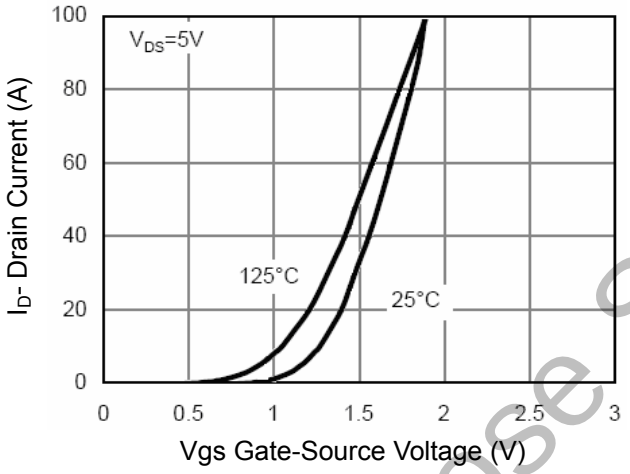


Figure 2 Transfer Characteristics

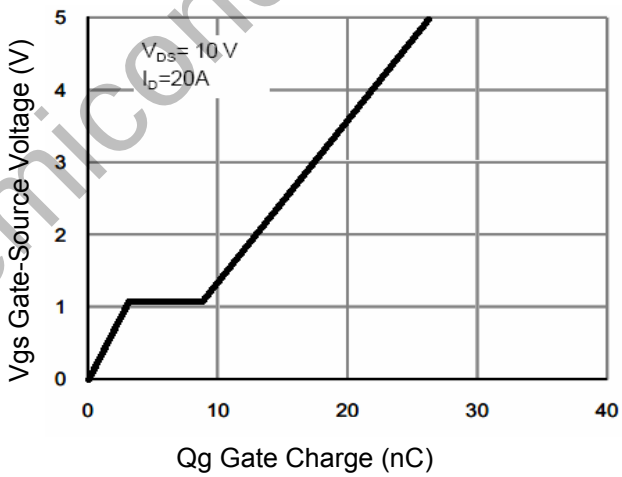


Figure 5 Gate Charge

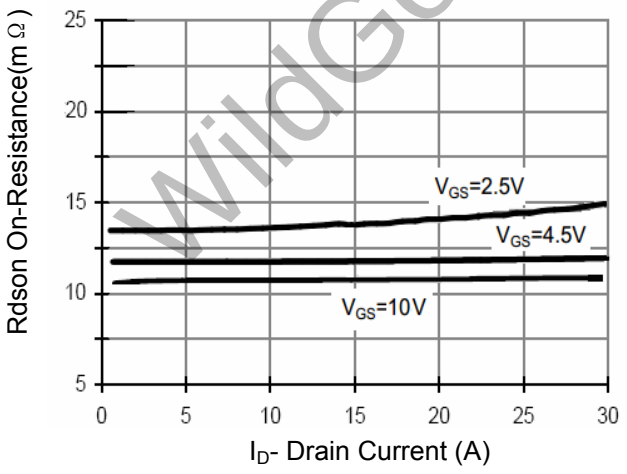


Figure 3 Rdson- Drain Current

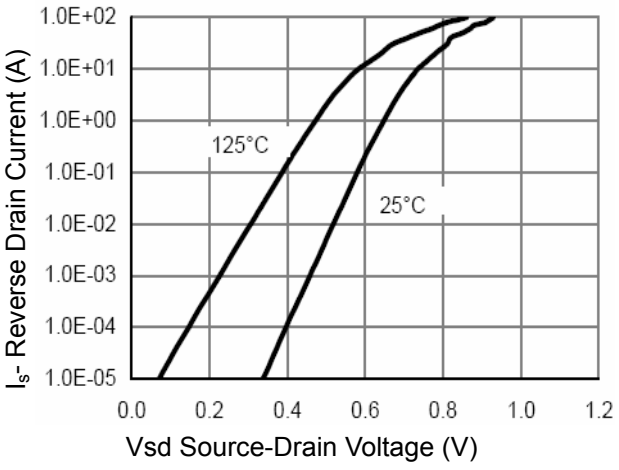


Figure 6 Source- Drain Diode Forward

WildGoose Semiconductor

N-Channel Typical Characteristics

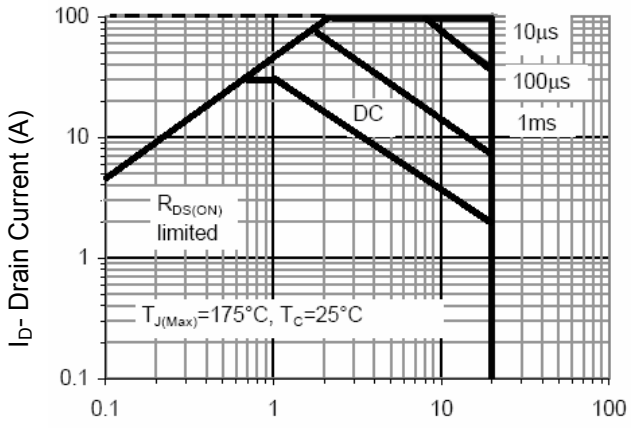


Figure 8 Safe Operation Area

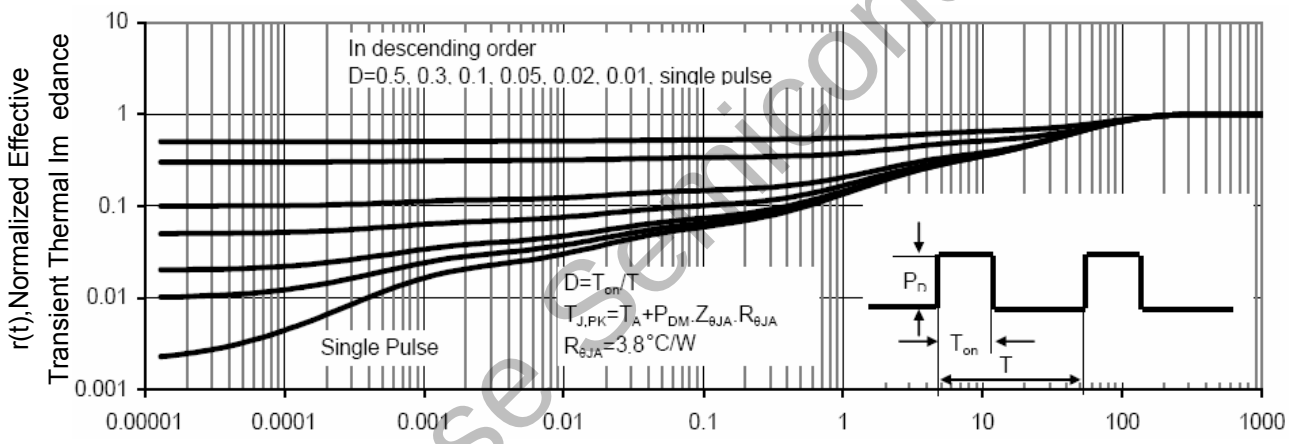


Figure 9 Normalized Maximum Transient Thermal Impedance

WildGoose Semiconductor

P-Channel Typical Characteristics

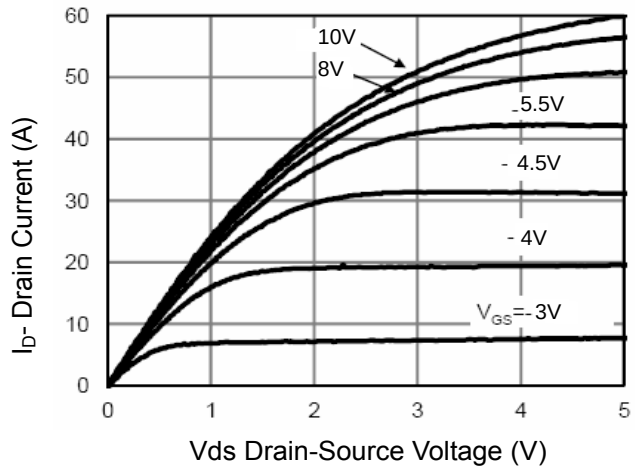


Figure 1 Output Characteristics

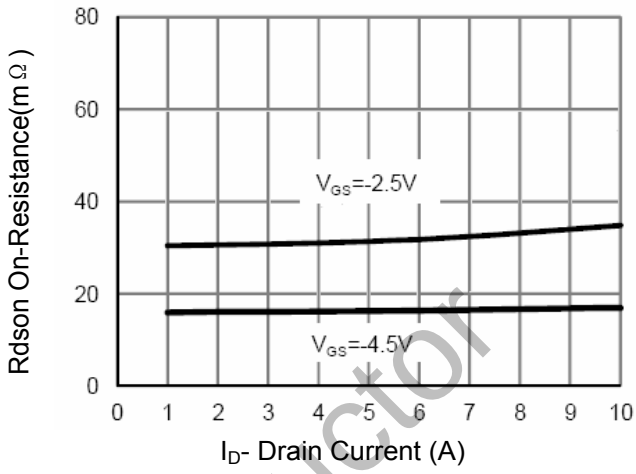


Figure 2 Drain-Source On-Resistance

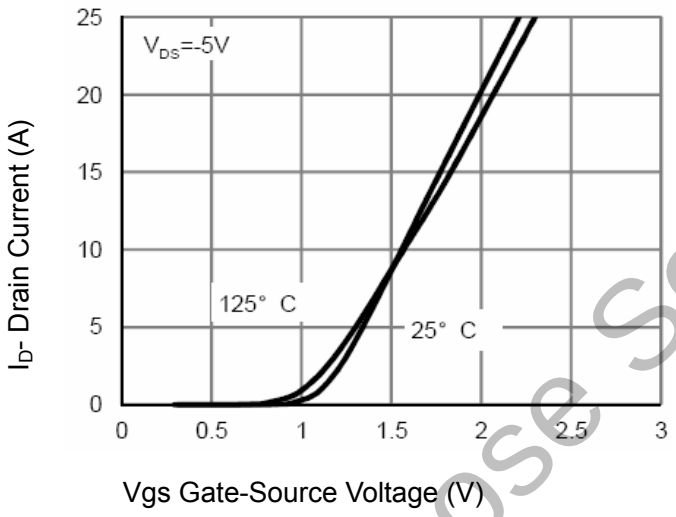


Figure 3 Transfer Characteristics

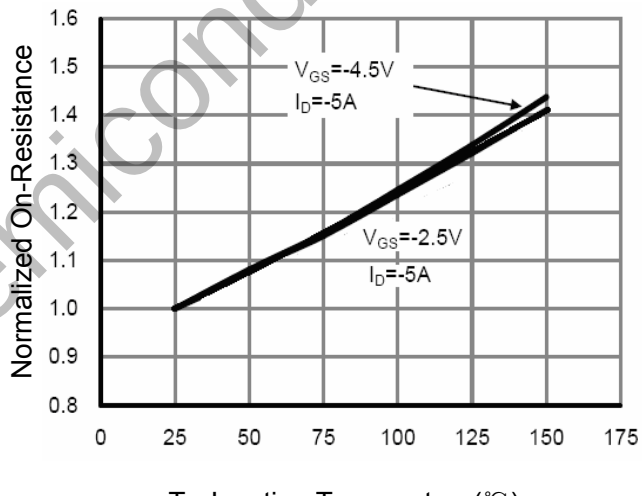


Figure 4 Drain-Source On-Resistance

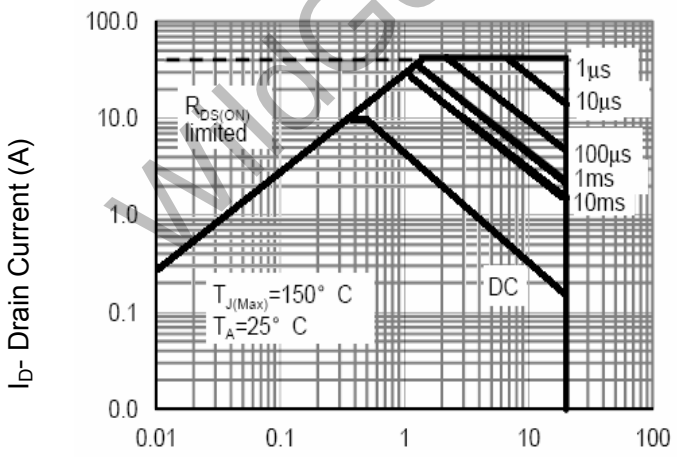


Figure 5 Safe Operation Area

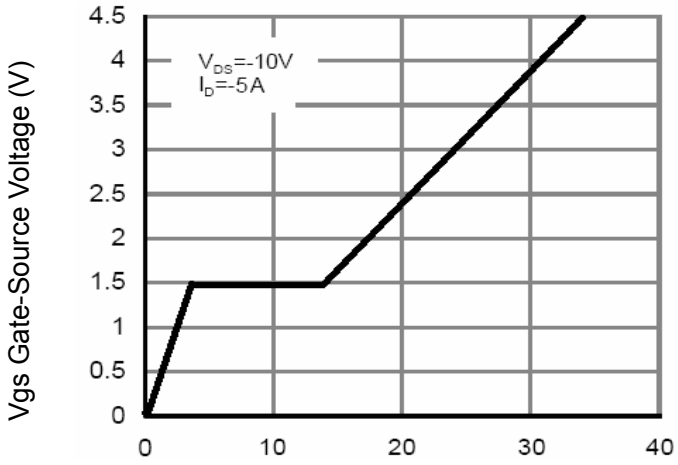


Figure 6 Gate Charge

WGGoose Semiconductor

P-Channel Typical Characteristics

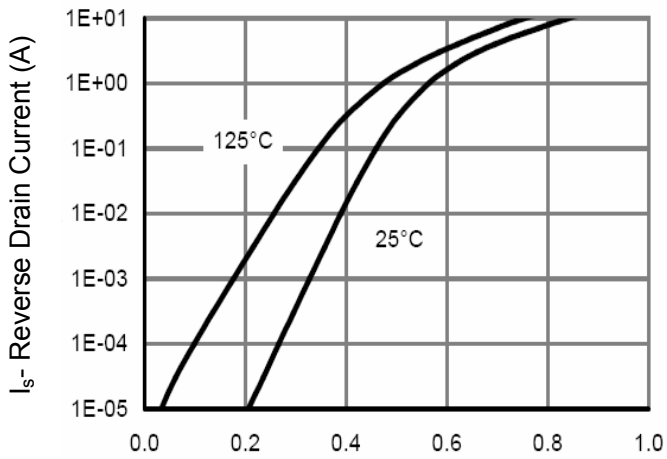


Figure 7 Source- Drain Diode Forward

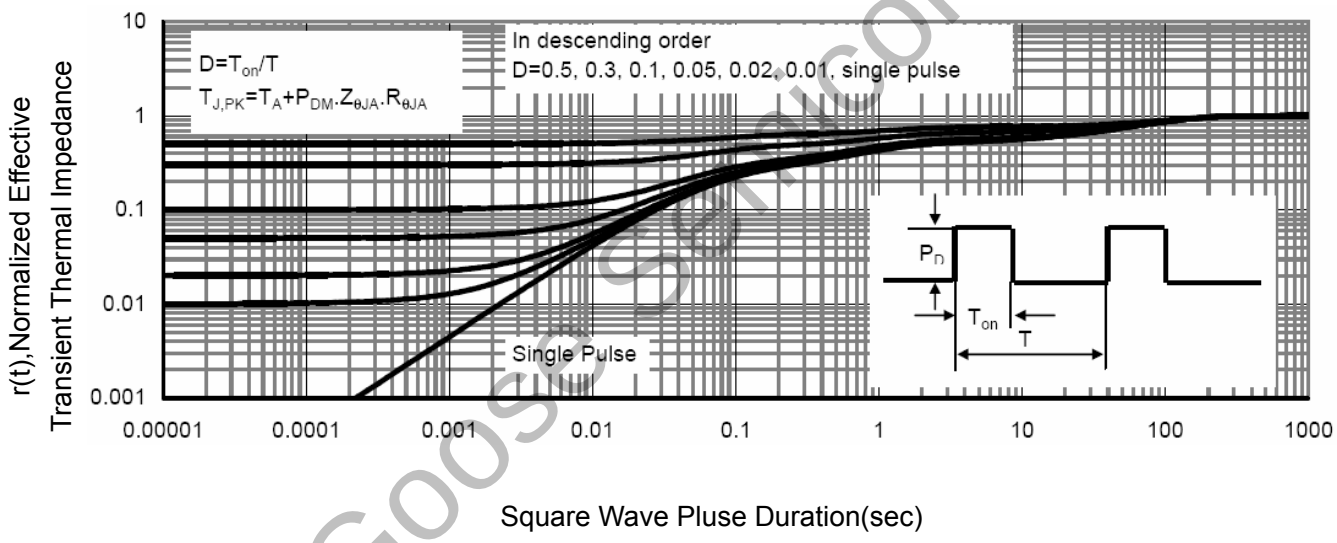


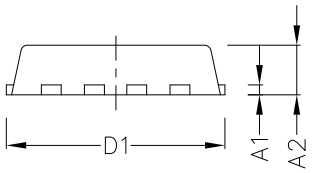
Figure 8 Normalized Maximum Transient Thermal Impedance

WildGoose Semiconductor

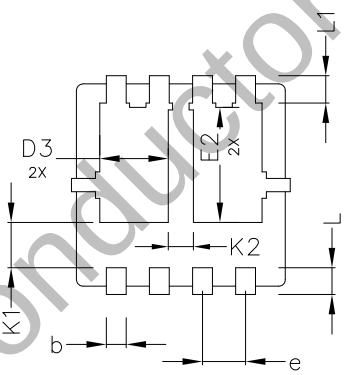
Package Dimension

PDFN3X3

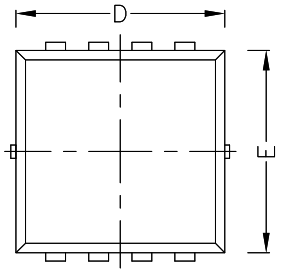
Unit: mm



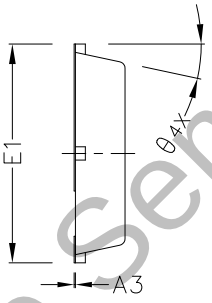
SIDE VIEW



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE IS mm)

	MIN	NORMAL	MAX
A1		0.152 BSC	
A2	0.650	0.750	0.850
⚠C A3	0.005	–	0.020
b	0.250	0.300	0.350
D	3.050	3.150	3.250
D1	3.200	3.300	3.400
D2	2.350	2.450	2.550
D3	0.935	1.035	1.135
⚠B E1	3.150	3.300	3.450
⚠B E	2.950	3.050	3.150
E2	1.635	1.735	1.835
e		0.650 TYPE	
L	0.300	0.400	0.500
θ		12° TYPE	
K1		0.680 REF	
K2		0.380 REF	
L1		0.410 REF	

WildGoose Semiconductor