WGEN011V40

PDFN3*3

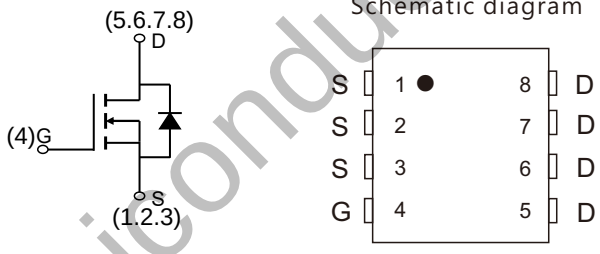
RoHS COMPLIANT



Features:

- ☐ Advanced Trench Technology.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 26nC (Typ.).
- ☐ BVDSS=40 V,I_D=20A
- ☐ R_{DS}(on) : 13 mΩ (Typ.) @V_G=10V
- ☐ 100% Avalanche Tested

Schematic diagram



Absolute Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		40	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	20	A
		T_C = 100°C	13	
I_{DM}	Pulsed Drain Current (1)		80	A
E_{AS}	Single Pulsed Avalanche Energy (2)		30	mJ
P_D	Power Dissipation	T_C = 25°C	50	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (3)		61	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.5	
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

WINGOOSE Semiconductor

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 40V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.8	2.3	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D =15A	-	13	17	mΩ
		V_{GS} = 4.5V, I_D = 10A	-	18	29	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	-	1342	-	pF
C_{oss}	Output Capacitance		-	87	-	pF
C_{rss}	Reverse Transfer Capacitance		-	72	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 20V, I_D = 10A	-	26	-	nC
Q_{gs}	Gate Source Charge		-	6	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 20V I_D= 10A, R_{GEN} = 3Ω	-	7	-	ns
t_r	Turn-On Rise Time		-	11	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	26	-	ns
t_f	Turn-Off Fall Time		-	5	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	20	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	80	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S =15A	-	0.85	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 10A, di/dt = 100A/us	-	10	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	6	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=11A

3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

WinGoose Semiconductor

Typical Performance Characteristics

Figure 1: Output Characteristics

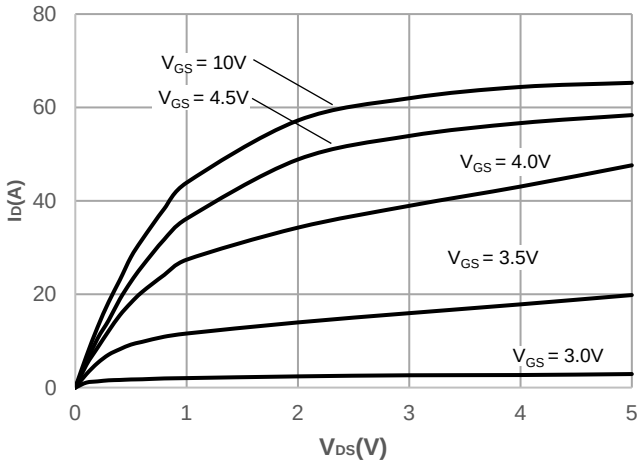


Figure 2: Typical Transfer Characteristics

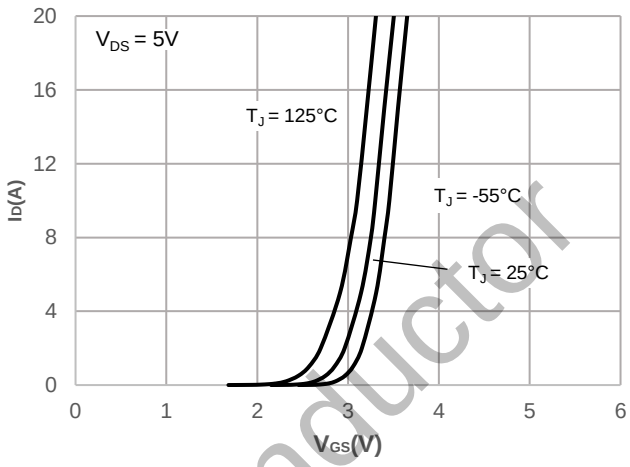


Figure 3: On-resistance vs. Drain Current

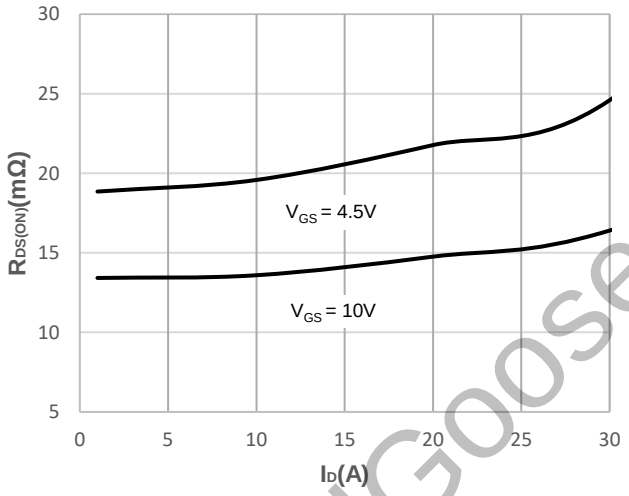


Figure 4: Body Diode Characteristics

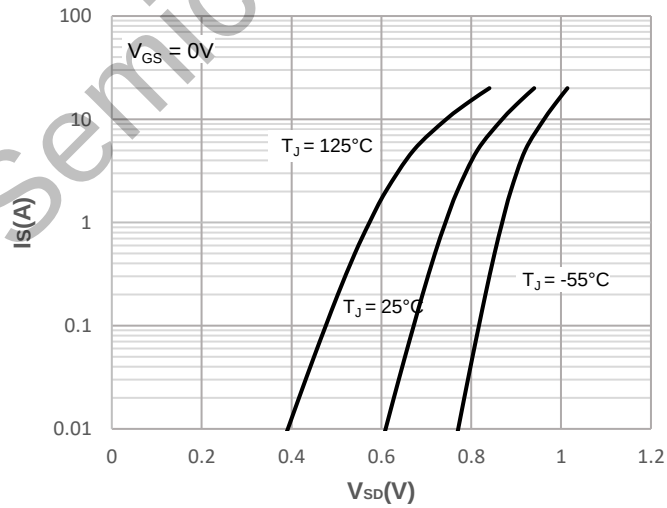


Figure 5: Gate Charge Characteristics

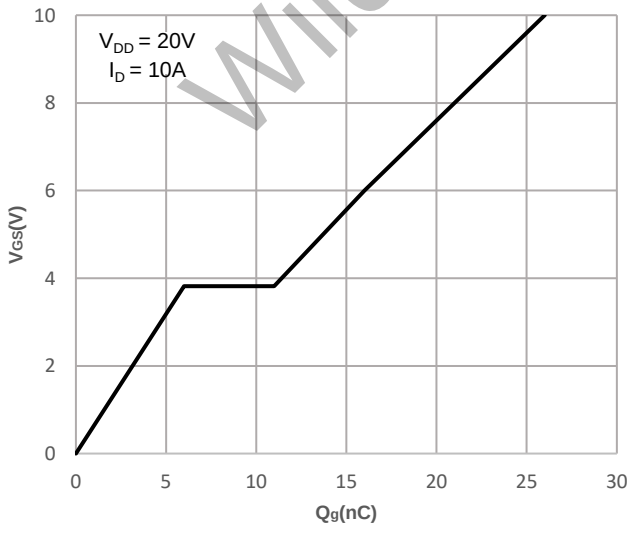
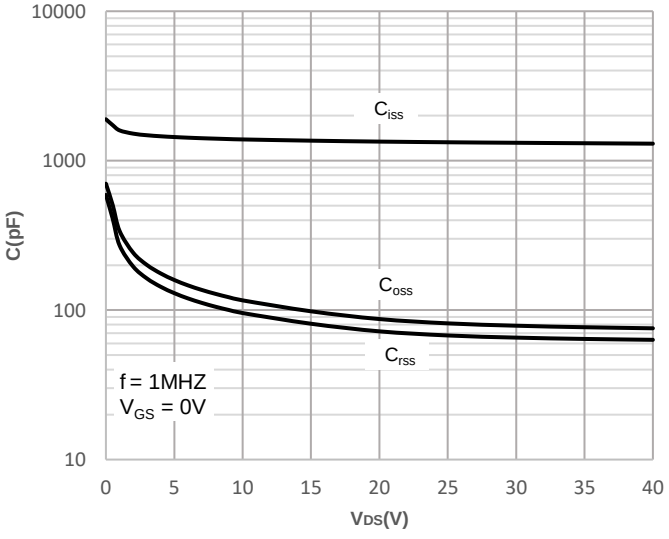


Figure 6: Capacitance Characteristics



WildGoose Semiconductor

Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

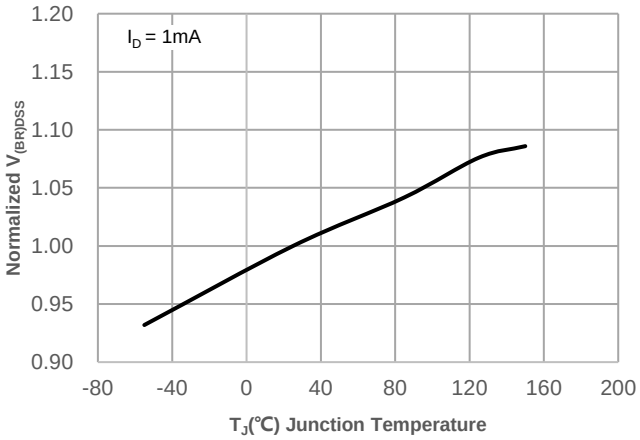


Figure 8: Normalized on Resistance vs. Junction Temperature

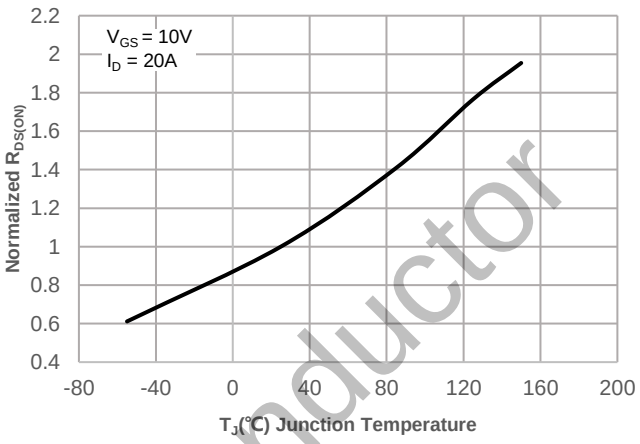


Figure 9: Maximum Safe Operating Area

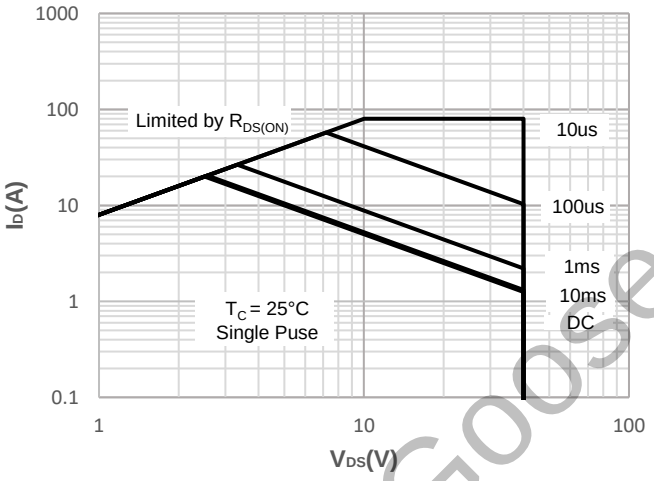


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

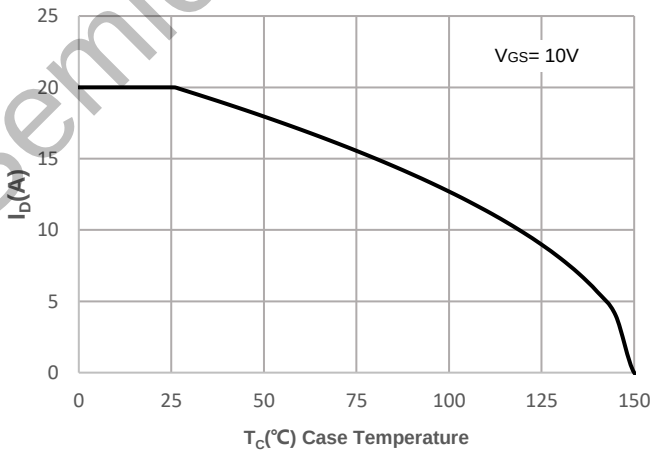


Figure 11: Normalized Maximum Transient Thermal Impedance

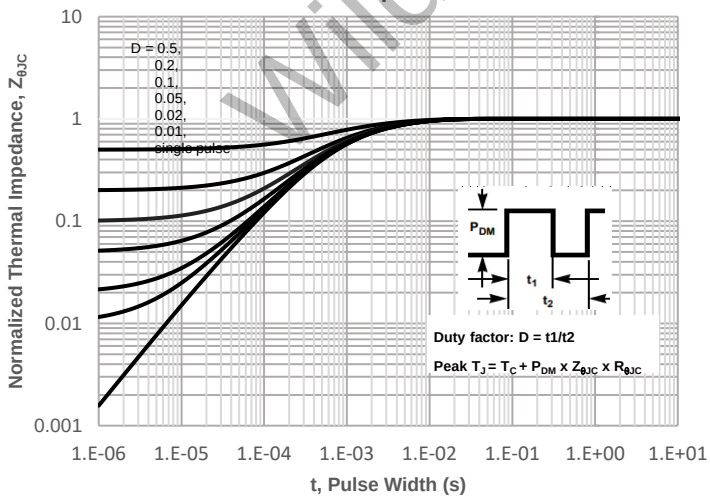
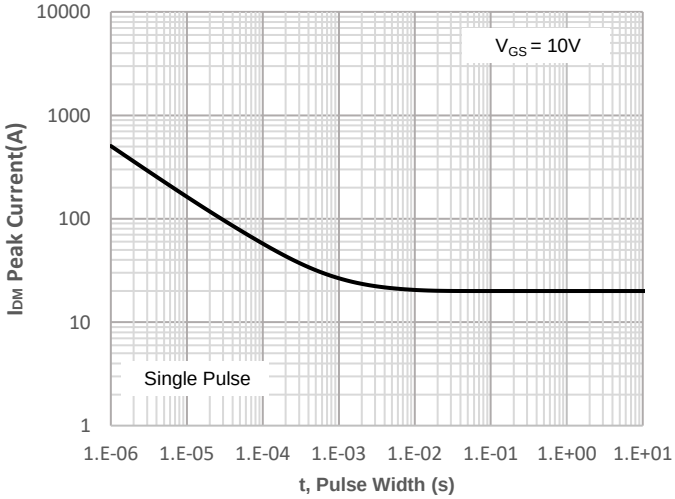


Figure 12: Peak Current Capacity



WinGoose Semiconductor

Test Circuit

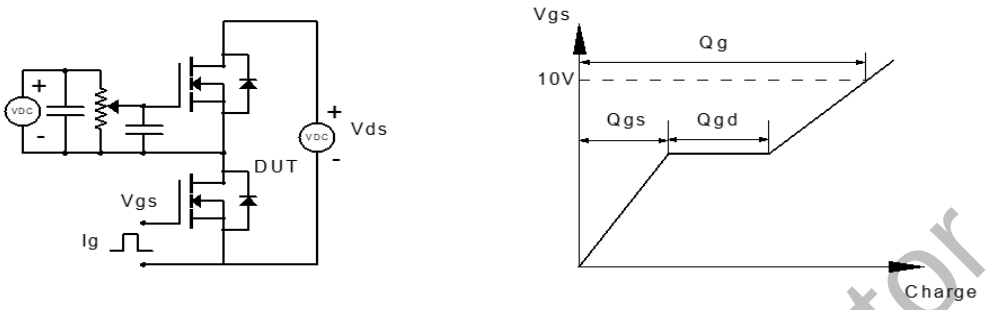


Figure 1: Gate Charge Test Circuit & Waveform

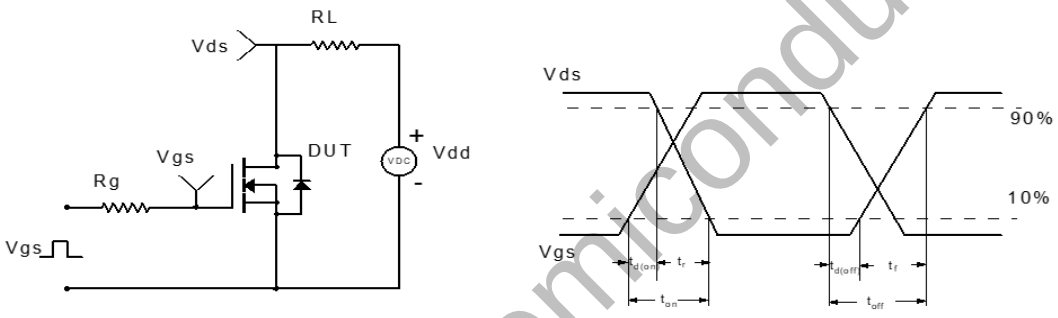


Figure 2: Resistive Switching Test Circuit & Waveform

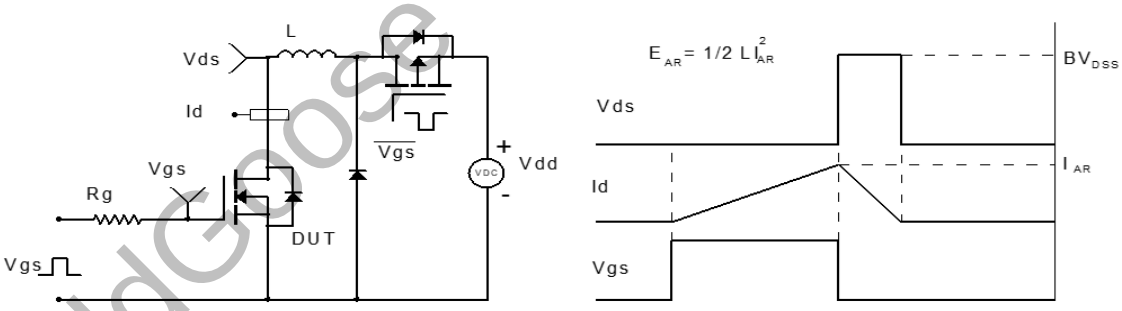


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

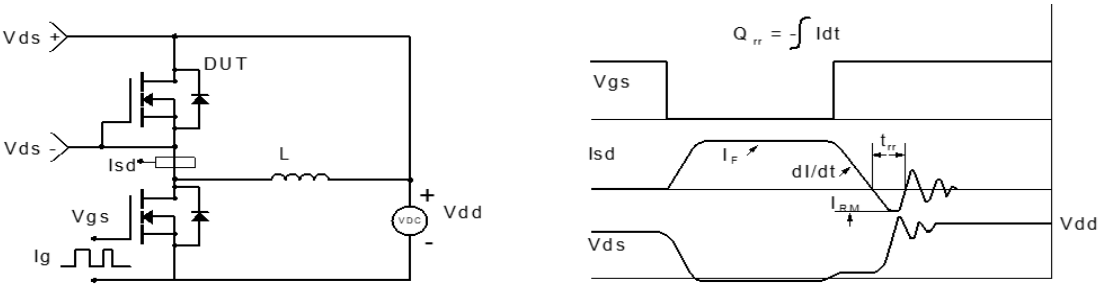


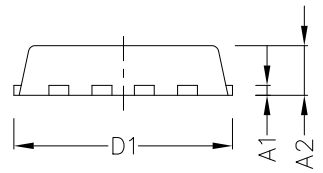
Figure 4: Diode Recovery Test Circuit & Waveform

WildGoose Semiconductor

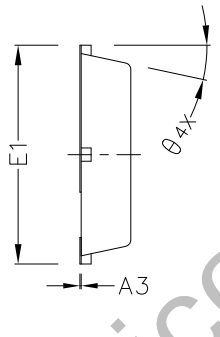
Package Dimension

PDFN3*3

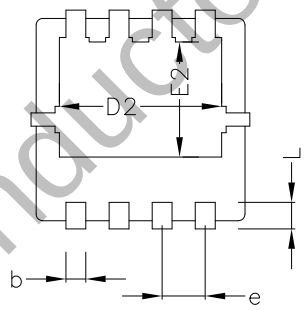
Unit:mm



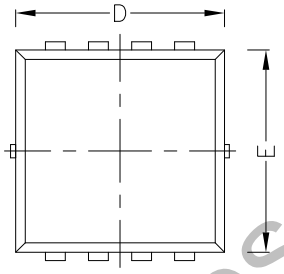
SIDE VIEW



SIDE VIEW



BOTTOM VIEW
OPTION 1



TOP VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE IS mm)

	MIN	NORMAL	MAX
A1		0.152 BSC	
A2	0.650	0.750	0.850
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
E1	3.150	3.300	3.450
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