WGEN06V40

Features:

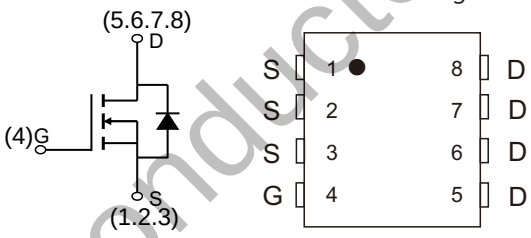
- ☐ Lead free and Green Device Available
- ☐ Excellent Rds(on)and Low Gate Charge
- ☐ Lead free product is acquired
- ☐ Unrivalled Gate Charge :Qg=45nC (Typ.)
- ☐ VDSS=40V,I_D=40A
- ☐ R_{DS}(on) : 6.6mΩ (Typ) @V_G=10V
- ☐ 100% Avalanche Tested

DFN3*3

RoHS COMPLIANT



Schematic diagram



Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	40	A
		T_C = 100℃	25	A
I_{DM}	Pulsed Drain Current note1		160	A
E_{AS}	Single Pulsed Avalanche Energy note2		72	mJ
P_D	Power Dissipation	T_C = 25℃	53	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.8	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

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Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =40V, V_{GS} = 0V,	-	-	1.0	μA
I_{GSS}	Gate to 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	1.0		2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =30A	-	6.6	8.6	mΩ
		V_{GS} =4.5V, I_D =20A	-	9	12	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 20V, V_{GS} =0V, f = 1.0MHz	-	2400	-	pF
C_{oss}	Output Capacitance		-	192	-	pF
C_{rss}	Reverse Transfer Capacitance		-	165	-	pF
Q_g	Total Gate Charge	V_{DS} =20V, I_D =25A, V_{GS} =10V	-	45	-	nC
Q_{gs}	Gate-Source Charge		-	8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	10	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V, I_D =25A, R_L=1.2Ω, R_{GEN}=3Ω, V_{GS} =10V	-	12	-	ns
t_r	Turn-on Rise Time		-	75	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	50	-	ns
t_f	Turn-off Fall Time		-	105	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	40	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	160	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} =0V, I_S=30A	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	T_J=25℃, I_F=30A,dI/dt=100A/μs	-	15	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	8	-	nC

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

2. EAS condition: T_J=25℃, V_{DD}=20V, V_G=10V, R_G=25Ω， L=0.5mH, I_{AS}=15A

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

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Typical Performance Characteristics

Figure1: Output Characteristics

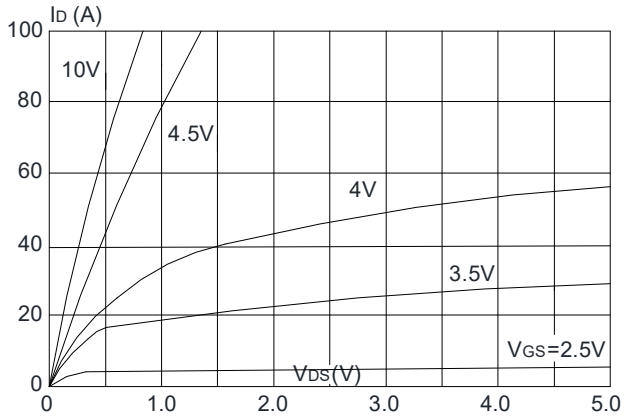


Figure 2: Typical Transfer Characteristics

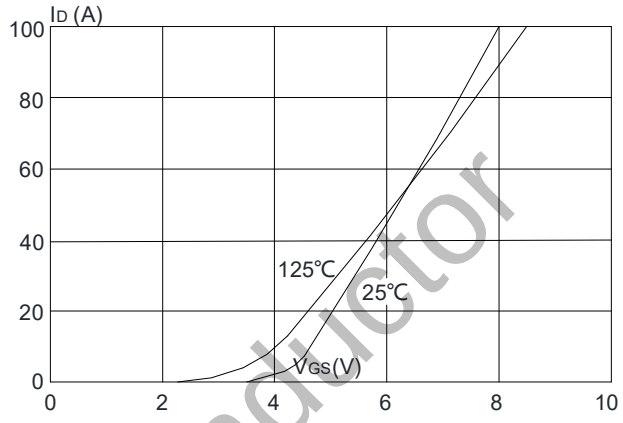


Figure 3: On-resistance vs. Drain Current

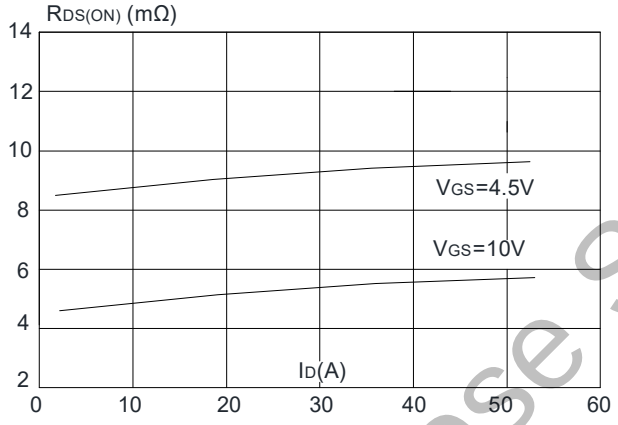


Figure 4: Body Diode Characteristics

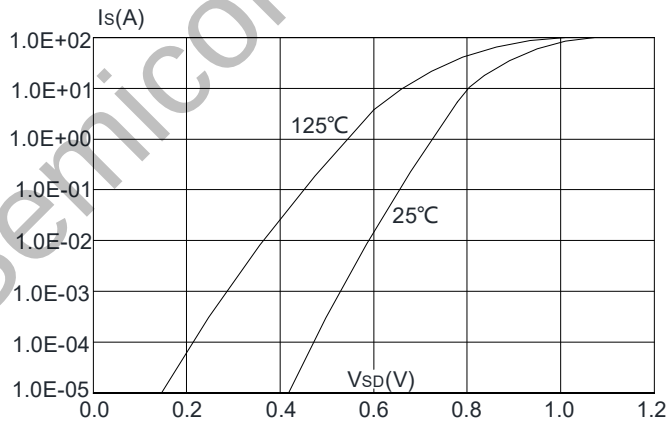


Figure 5: Gate Charge Characteristics

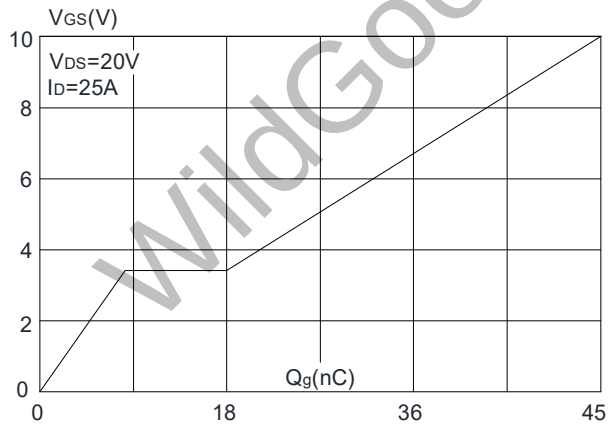
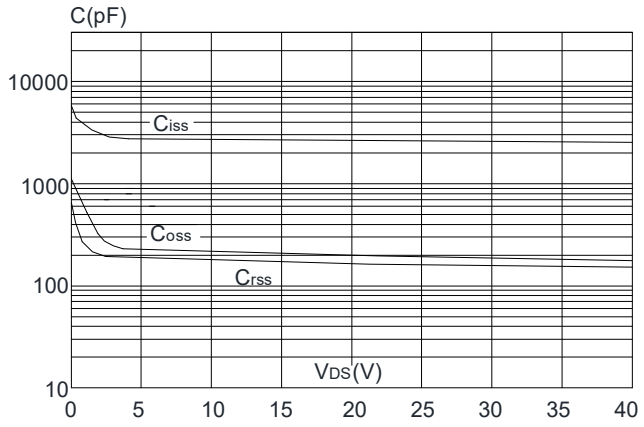


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

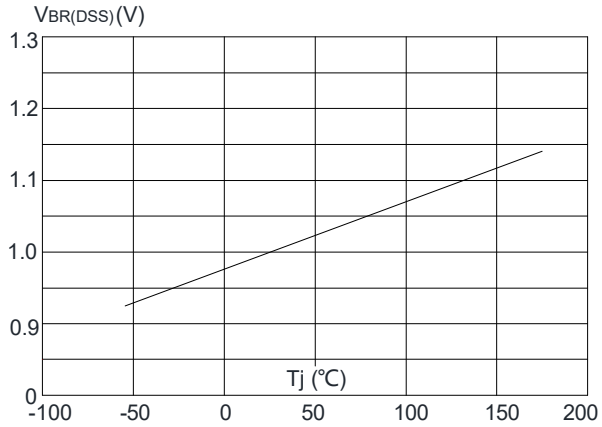


Figure 8: Normalized on Resistance vs. Junction Temperature

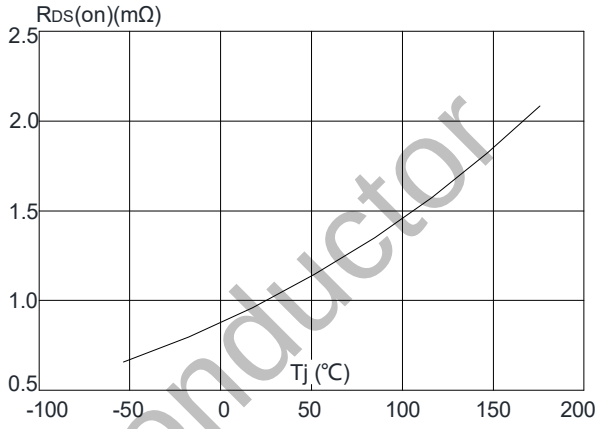


Figure 9: Maximum Safe Operating Area

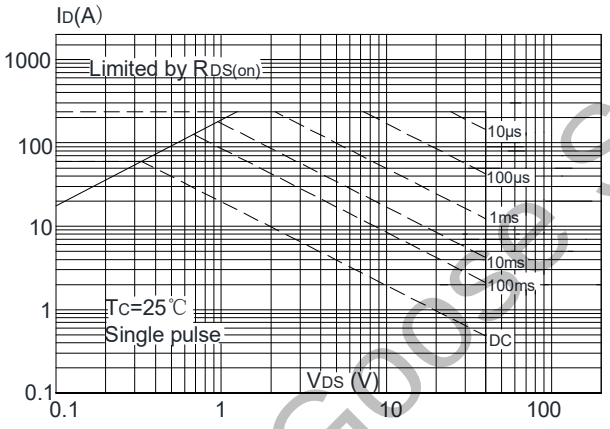


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

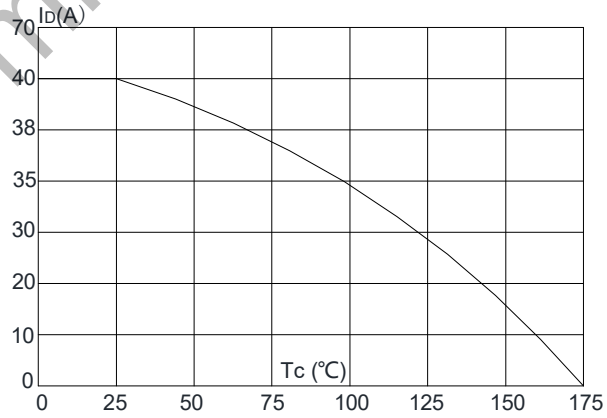
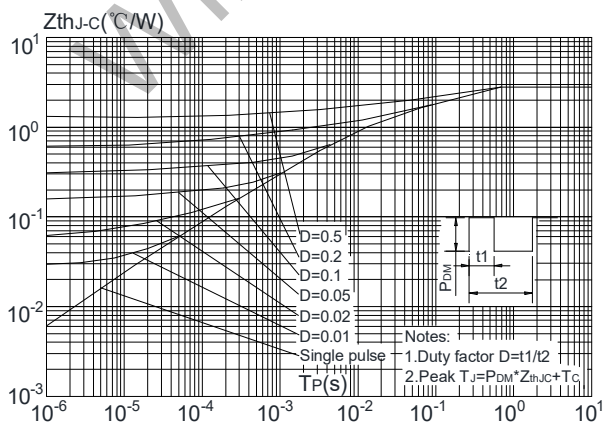


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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Test Circuit

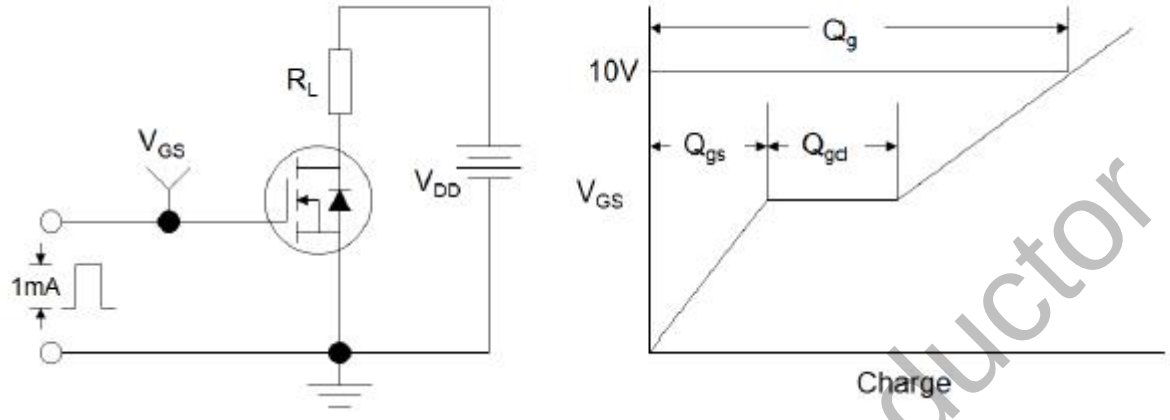


Figure1:Gate Charge Test Circuit & Waveform

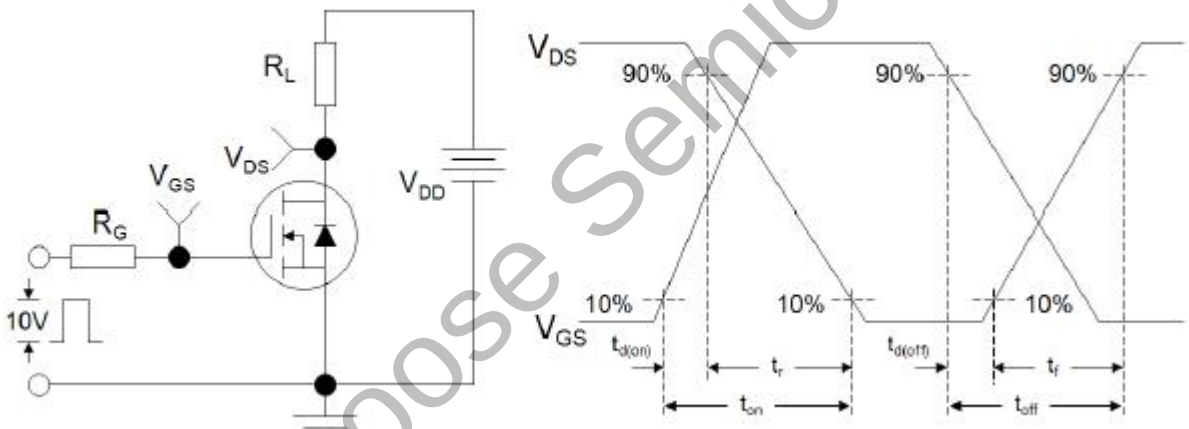


Figure 2: Resistive Switching Test Circuit & Waveforms

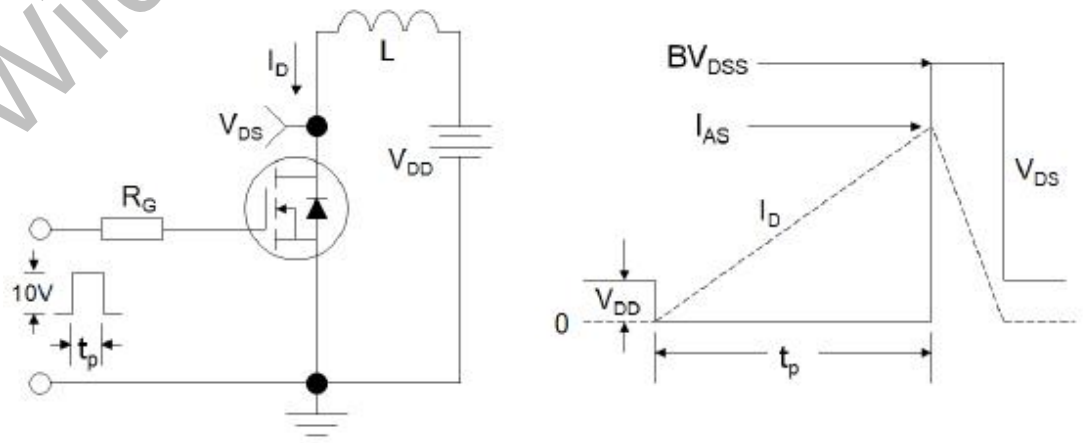


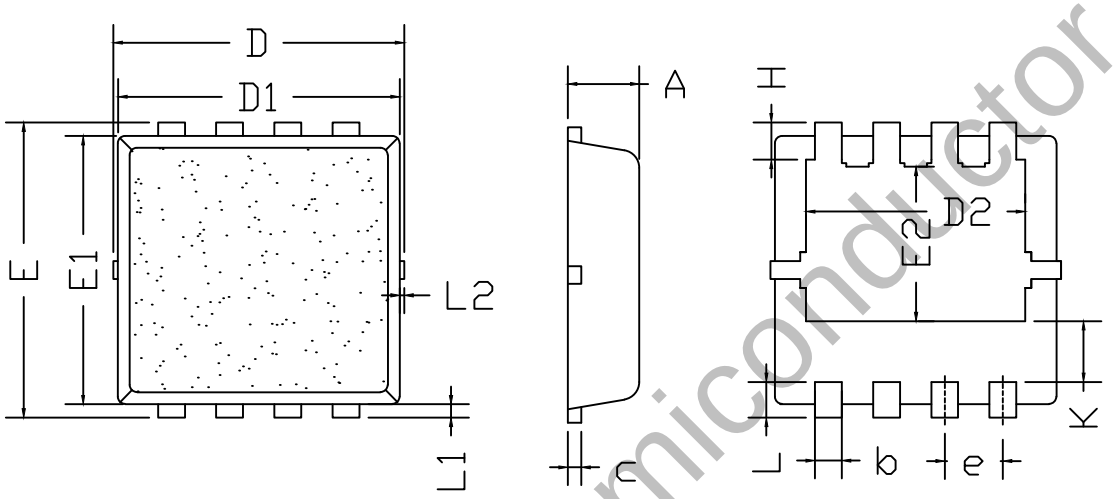
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

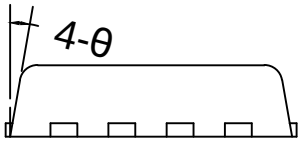
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Package Dimension

DFN3*3

Unit:mm





SYMBOL	mm		
	MIN	NOM	MAX
*A	0.70	0.80	0.90
*b	0.25	0.30	0.35
*c	0.20	0.25	0.30
D	3.25BSC		
*D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
*e	0.55	0.65	0.75
E	3.30BSC		
*E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.32	0.42	0.52
K	0.58	0.68	0.78
L	0.30	0.40	0.50
L1	0.10	0.15	0.20
L2	–	–	0.12
θ	8°	10°	12°

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