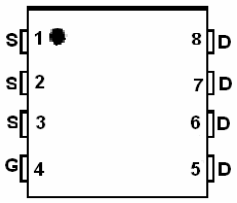
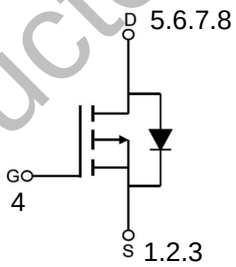
WGN03P30

PDFN5X6-8L

RoHS COMPLIANT

Schematic diagram





Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 125nC (Typ.).
- ☐ BVDSS=-30 V,I_D=-99A
- ☐ R_{DS}(on) :2.8mΩ (Typ.) @V_G=10V
- ☐ 100% Avalanche Tested

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	-30	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_C=25℃)	-99	A
	Drain Current-Continuous(T_C=100℃)	-60	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	-400	A
P_D	Maximum Power Dissipation(T_C=25℃)	85	W
	Maximum Power Dissipation(T_C=100℃)	35	W
E_{AS}	Avalanche energy (Note 2)	516	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		1.4	℃/W

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V, V_{GS}=0V T_J=25℃			-1	μA
		V_{DS}=-30V, V_{GS}=0V T_J=125℃			-100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.7	-2.5	V
g_{FS}	Forward Transconductance	V_{DS}=-5V, I_D=-20A		60		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-20A		2.8	3.7	mΩ
		V_{GS}=-4.5V, I_D=-20A		4.6	6.1	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1.0MHz		6855		pF
C_{oss}	Output Capacitance			810		pF
C_{rss}	Reverse Transfer Capacitance			520		pF
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		2.2		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=-10V, V_{DS}=-15V, R_L=0.75Ω, R_{GEN}=3Ω		13		nS
t_r	Turn-on Rise Time			32		nS
$t_{d(off)}$	Turn-Off Delay Time			27		nS
t_f	Turn-Off Fall Time			9		nS
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-15V, I_D=-20A		125		nC
Q_{gs}	Gate-Source Charge			12		nC
Q_{gd}	Gate-Drain Charge			31		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				-99	A
V_{SD}	Forward on Voltage (Note 3)	V_{GS}=0V, I_S=-20A			-1.2	V
t_{rr}	Reverse Recovery Time	I_F=-20A, di/dt=-100A/μs		30		ns
Q_{rr}	Reverse Recovery Charge	I_F=-20A, di/dt=-100A/μs		40		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.E_{AS} condition: T_J=25℃,V_{DD}=-30V,V_G=-10V, Rg=25Ω, L=0.5mH.
Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

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Typical Performance Characteristics

Figure 1. Output Characteristics

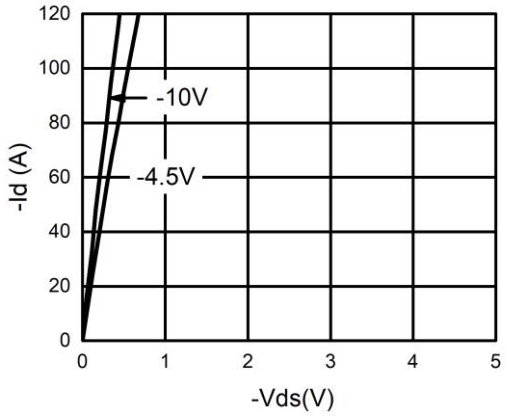


Figure 2. Transfer Characteristics

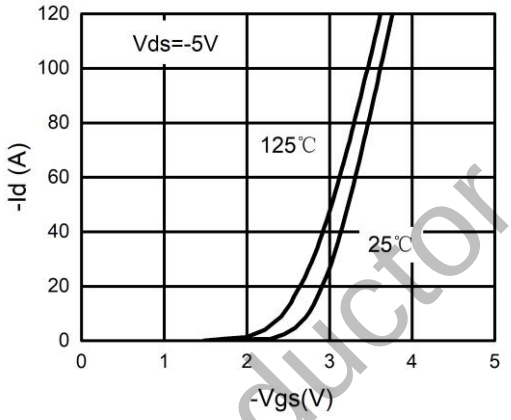


Figure 3. Power Dissipation

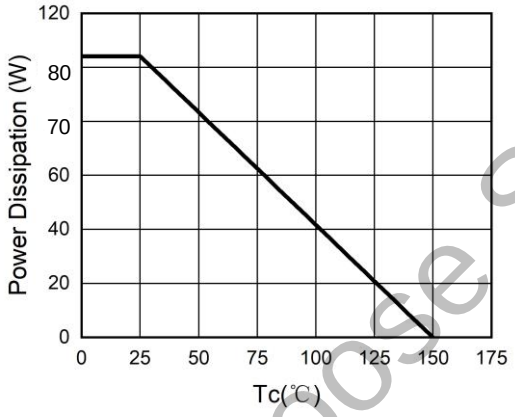


Figure 4. Drain Current

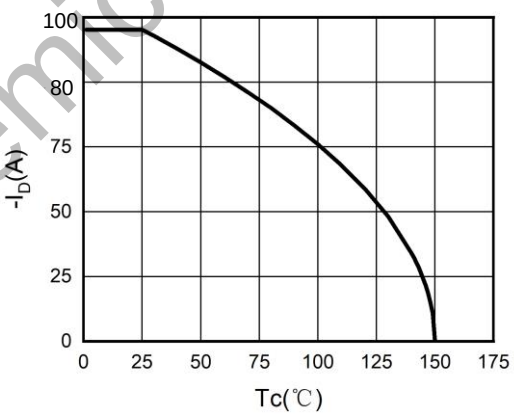


Figure 5. BV_{DSS} vs Junction Temperature

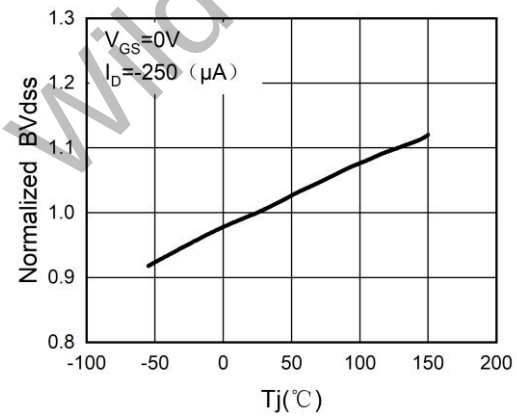
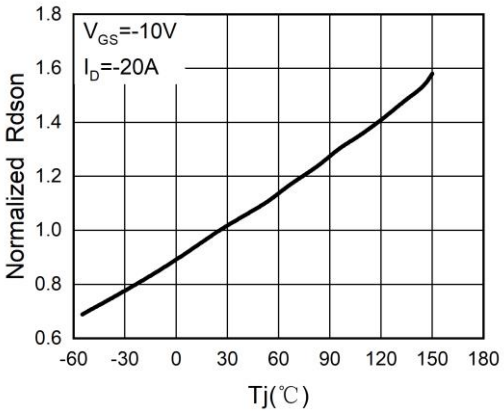


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



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Typical Performance Characteristics

Figure 7. Gate Charge Waveforms

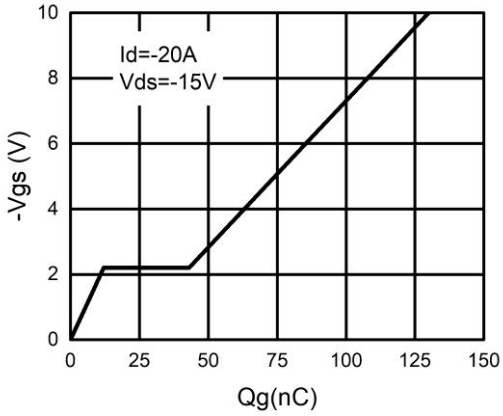


Figure 8. Capacitance

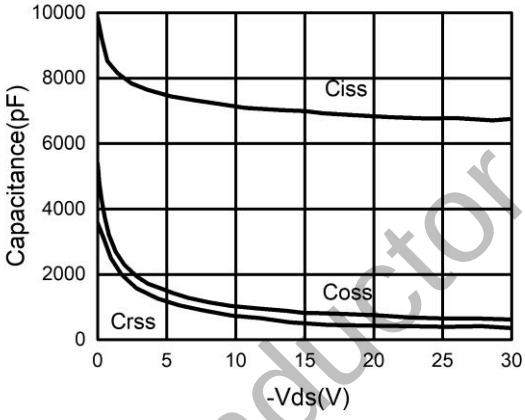


Figure 9. Body-Diode Characteristics

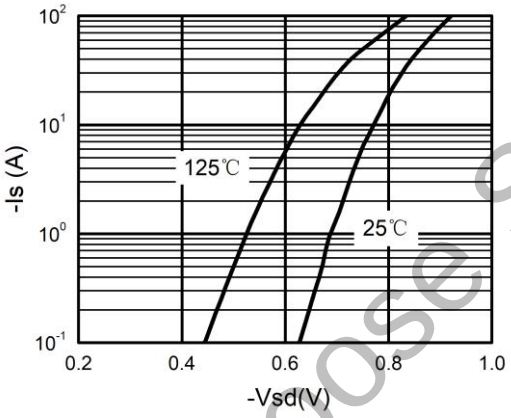
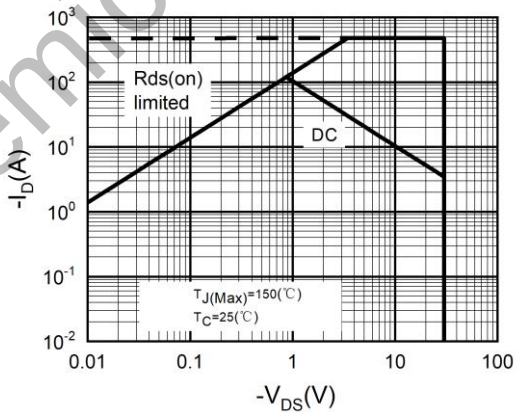


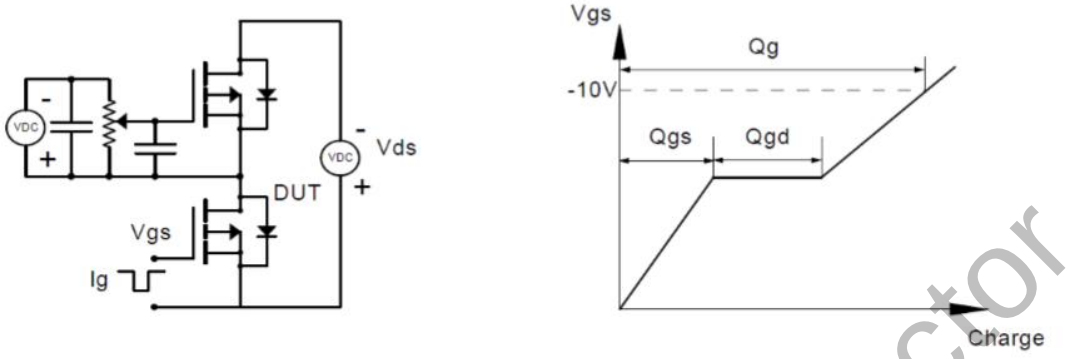
Figure 10. Maximum Safe Operating Area



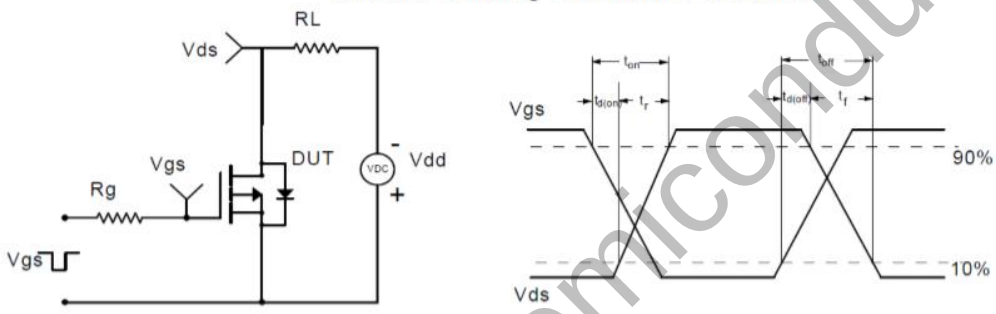
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Test Circuit

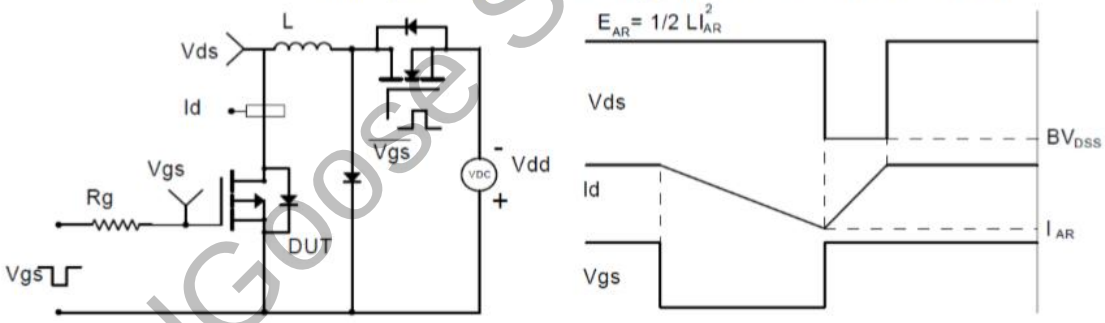
Gate Charge Test Circuit & Waveform



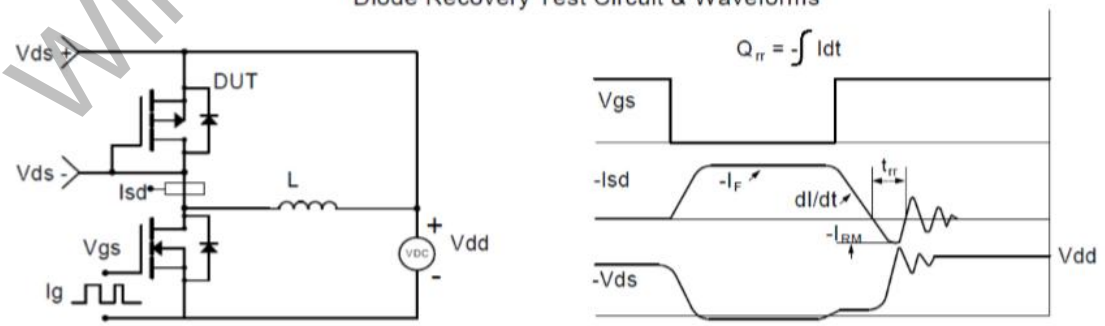
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

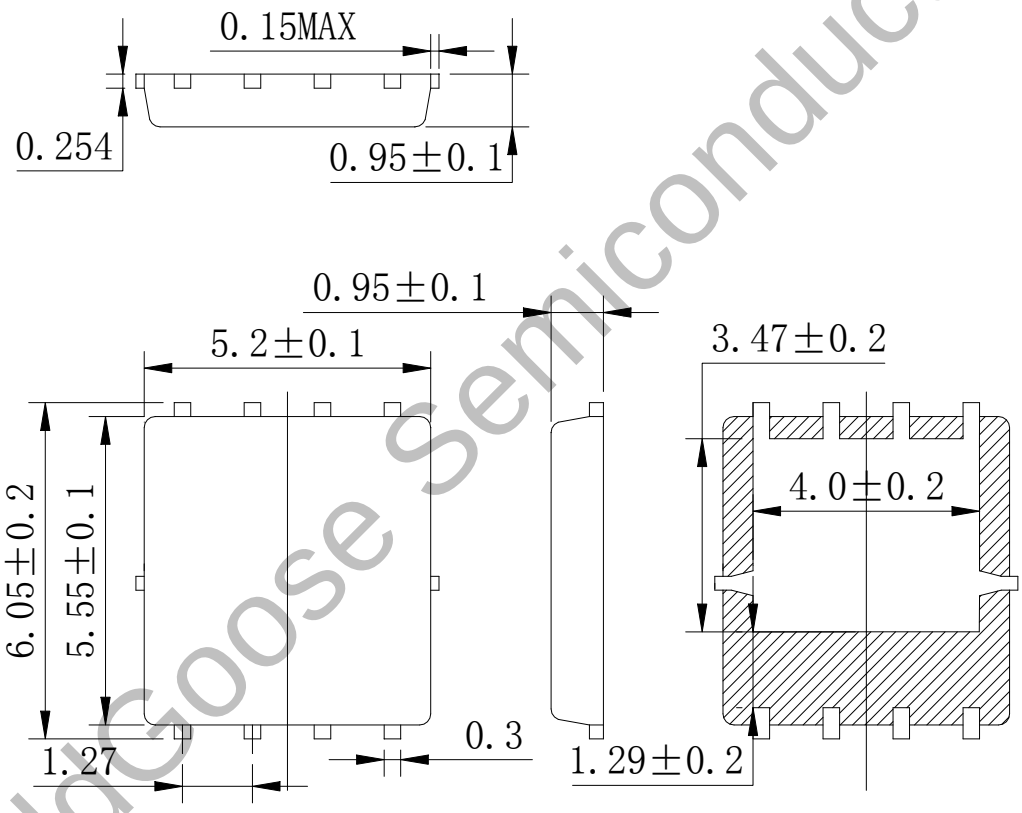


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Package Dimension

PDFN5X6-8L

Unit:mm



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