



PRODUCT DATA SHEET



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Datasheet



Resources

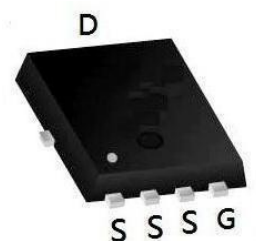


Samples

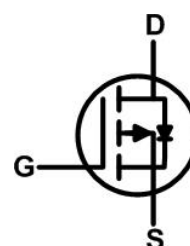
Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

BVDSS	RDSON	ID
-40V	10mΩ	-40A

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology



PDFN5060-8L



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $-V_{GS} @ -10V^1$	-40	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $-V_{GS} @ -10V^1$	-25	A
I_{DM}	Pulsed Drain Current ²	-160	A
EAS	Single Pulse Avalanche Energy ³	144	mJ
I_{AS}	Avalanche Current	-30.0	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	45	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	62	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	3.6	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ 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	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	-1.7	-2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} = -10V, I _D = -20A	-	10	13	mΩ
		V _{GS} = -4.5V, I _D = -10A	-	14	17	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -20V, V _{GS} =0V, f=1.0MHz	-	3800	-	pF
C _{oss}	Output Capacitance		-	329	-	pF
C _{rss}	Reverse Transfer Capacitance		-	289	-	pF
Q _g	Total Gate Charge	V _{DS} = -20V, I _D = -20A, V _{GS} = -10V	-	68	-	nC
Q _{gs}	Gate-Source Charge		-	10	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	14	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} = -20V, I _D = -20A, V _{GS} = -10V, R _{GEN} =2.4Ω	-	10	-	ns
t _r	Turn-on Rise Time		-	82	-	ns
t _{d(off)}	Turn-off Delay Time		-	93	-	ns
t _f	Turn-off Fall Time		-	74	-	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	-	-0.8	-1.2	V
trr	Reverse Recovery Time	V _{GS} =0V, I _S = -30A,	-	20	-	ns
Qrr	Reverse Recovery Charge	di/dt=100A/μs	-	13	-	nC

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

2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=-20V$, $V_G=-10V$, $L=0.5mH$, $R_G=25\Omega$, $I_{AS}=-24A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

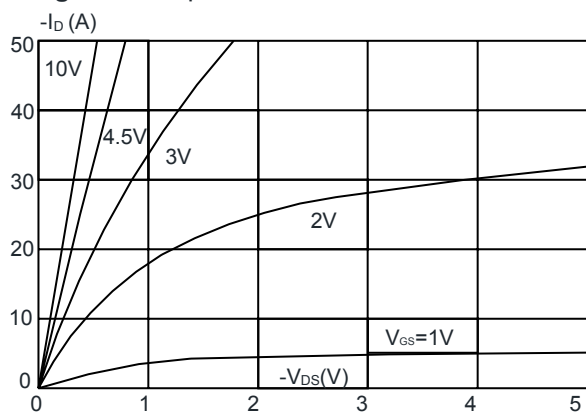


Figure 2: Typical Transfer Characteristics

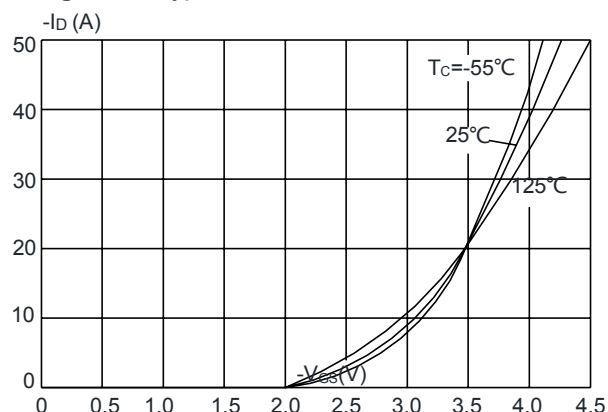


Figure 3: On-resistance vs. Drain Current

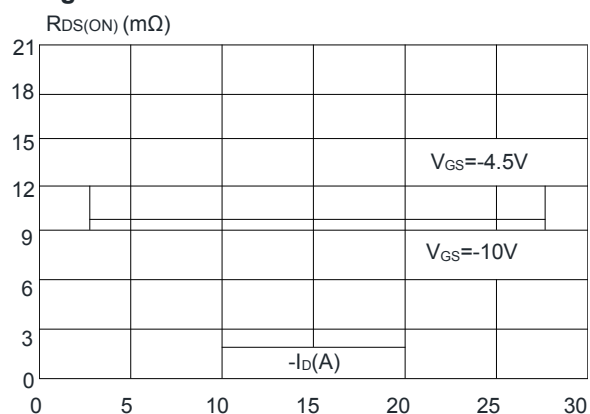


Figure 4: Body Diode Characteristics

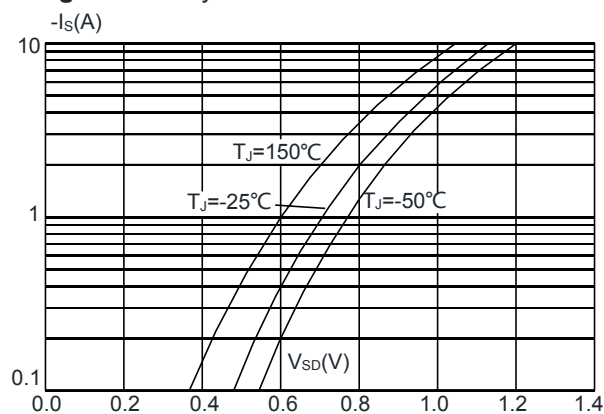


Figure 5: Gate Charge Characteristics

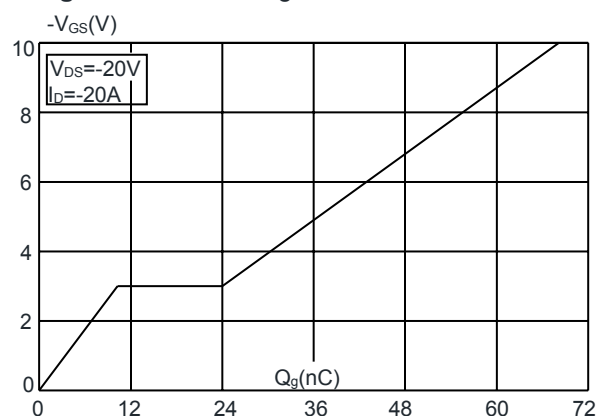


Figure 6: Capacitance Characteristics

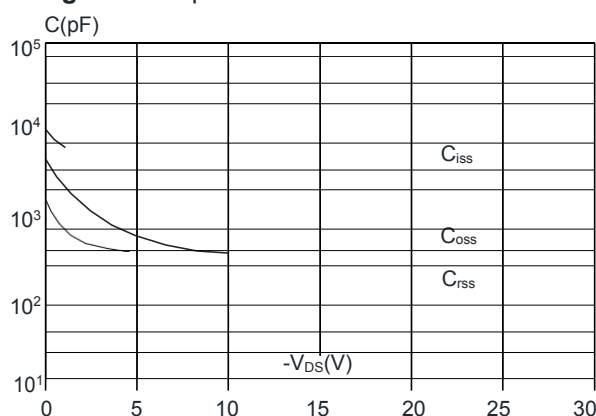


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

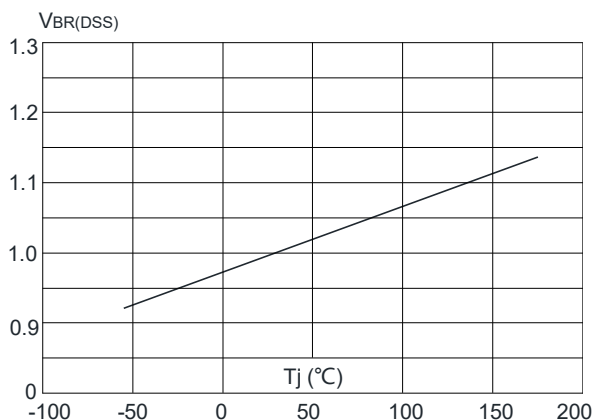


Figure 8: Normalized on Resistance vs. Junction Temperature

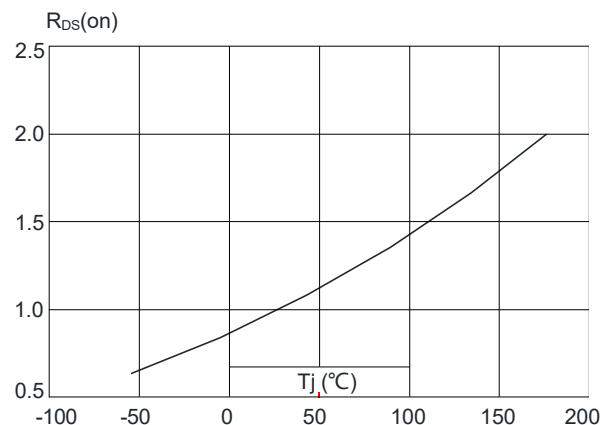


Figure 9: Maximum Safe Operating Area

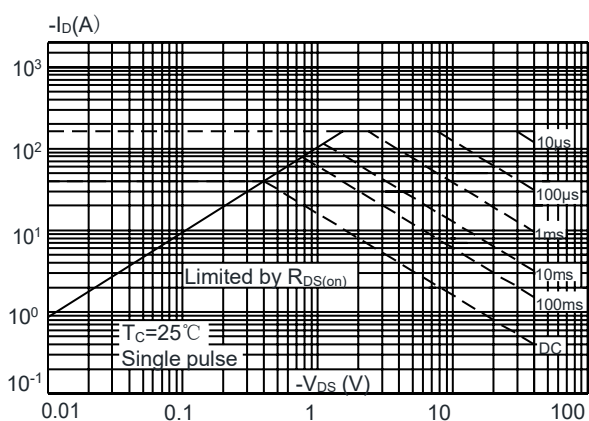


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

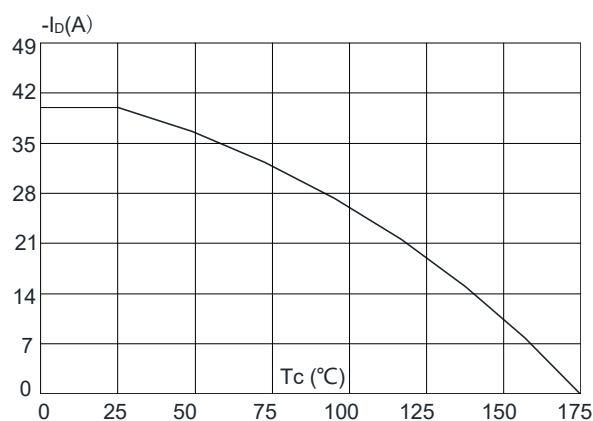
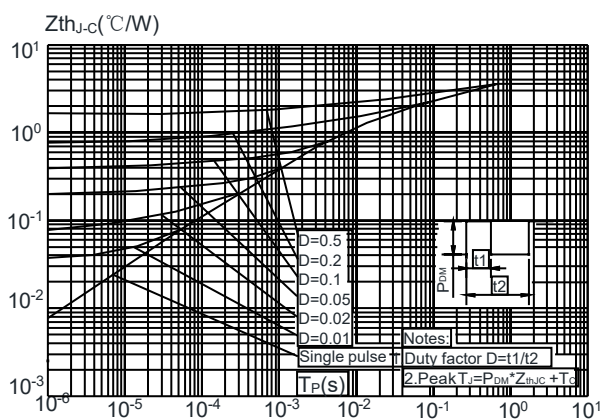
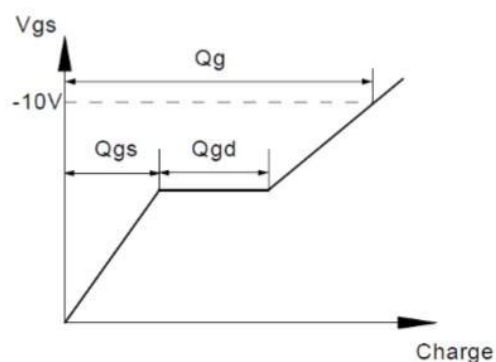
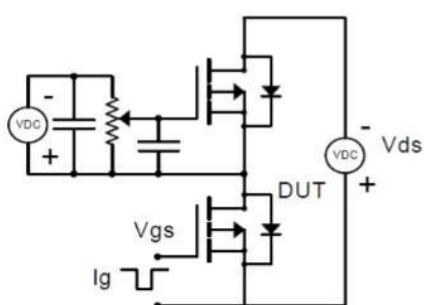


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

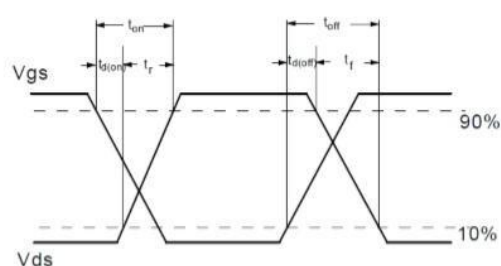
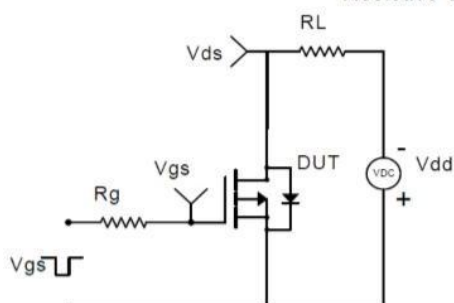


Test Circuit

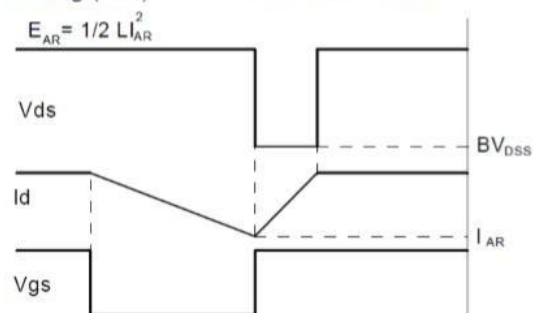
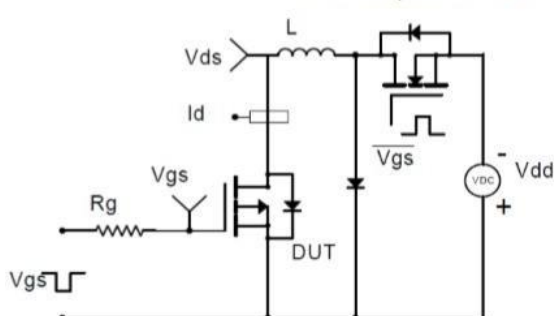
Gate Charge Test Circuit & Waveform



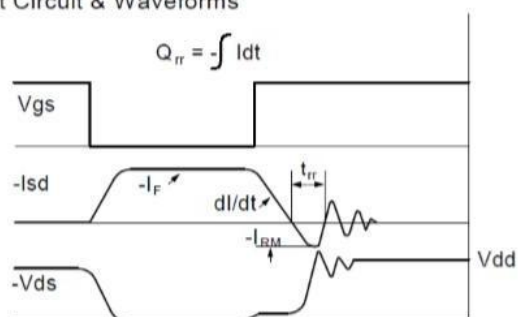
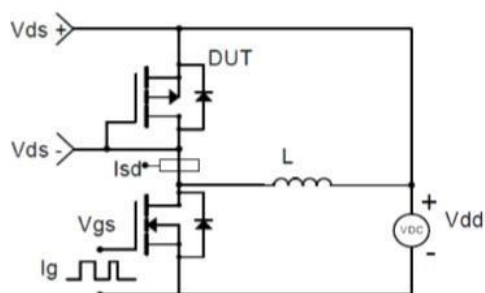
Resistive Switching Test Circuit & Waveforms



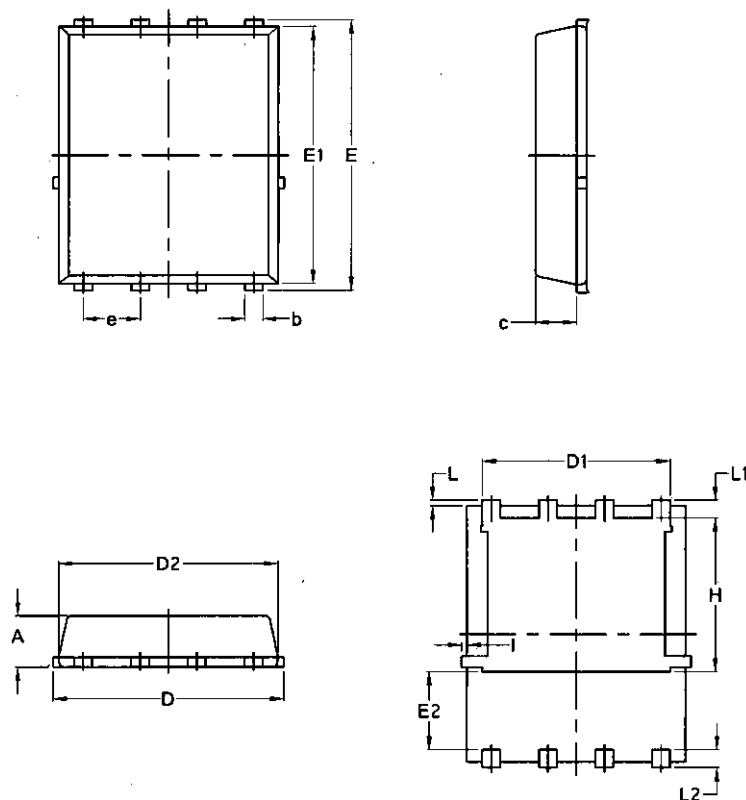
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data-PDFN5060-8L-Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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