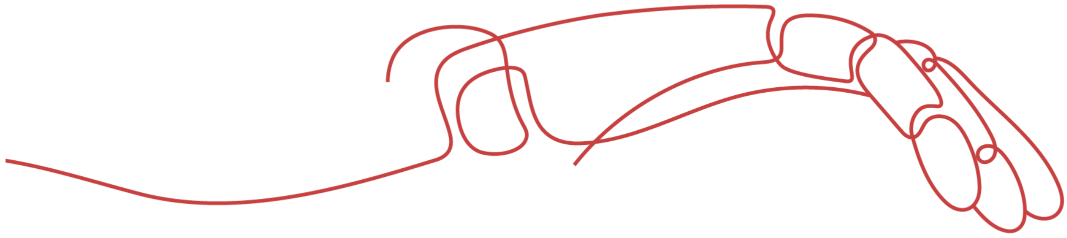
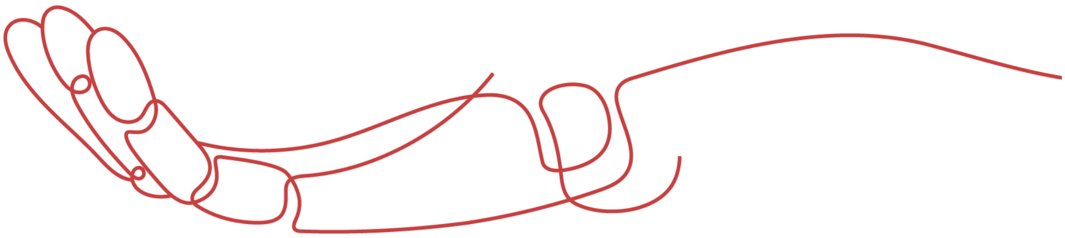
JG Techology



PRODUCT DATA SHEET



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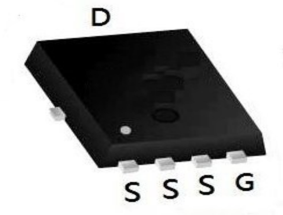
Datasheet Resources Samples

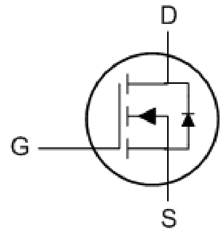
Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

Product Summary

BVDSS	RDSON	ID
40V	1.1mΩ	225A



PDFN5060-8L



Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions
- Synchronous-rectification applications

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current （Silicon limited）		I_D	225	A
Drain Current [A]	T_C=25℃	I_D	130	A
	T_C=100℃		82	
Pulsed Drain Current [B]		I_{DM}	390	A
Avalanche energy [C]		E_{AS}	450	mJ
Total Power Dissipation [D]		P_D	114	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	1.1	℃/ W
Thermal Resistance Junction-to-Ambient [E]		$R_{\theta JA}$	20	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ **Electrical Characteristics** (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	40	48		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=20A		1.1	1.4	mΩ
		V_{GS}= 4.5V, I_D=20A		1.7	2.3	
Gate Resistance	R_g	V_{GS}=0V,V_{DS} Open,f=1MHZ		2.7		Ω
Maximum Body-Diode Continuous Current	I_S				100	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=300KHZ		8300		pF
Output Capacitance	C_{oss}			1510		
Reverse Transfer Capacitance	C_{rss}			130		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=32V,I_D=20A		127		nC
Gate-Source Charge	Q_{gs}			35		
Gate-Drain Charge	Q_{gd}			26		
Reverse Recovery Chrage	Q_{rr}	I_F=25A, di/dt=100A/us		163		
Reverse Recovery Time	t_{rr}			100		ns
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=20V,I_D=25A R_{GEN}=2Ω		22.5		
Turn-on Rise Time	t_r			6.7		
Turn-off Delay Time	$t_{d(off)}$			80.3		
Turn-off fall Time	t_f			26.9		

■ Typical Performance Characteristics

Figure.1 Typical Output Characteristics

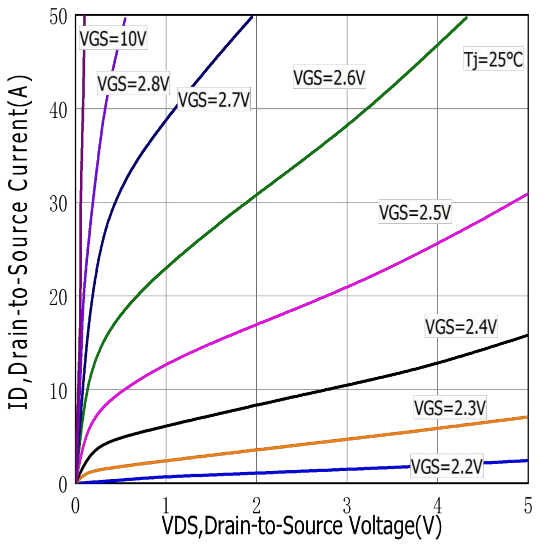


Figure.2 Typical Gate Charge vs Gate to Source Voltage

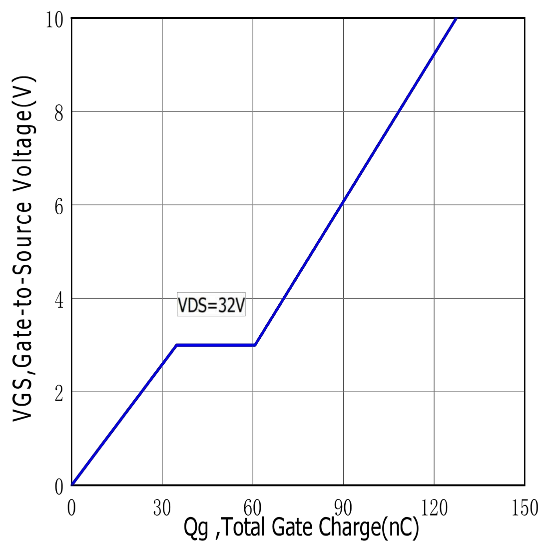


Figure.3 Typical Body Diode Transfer Characteristics

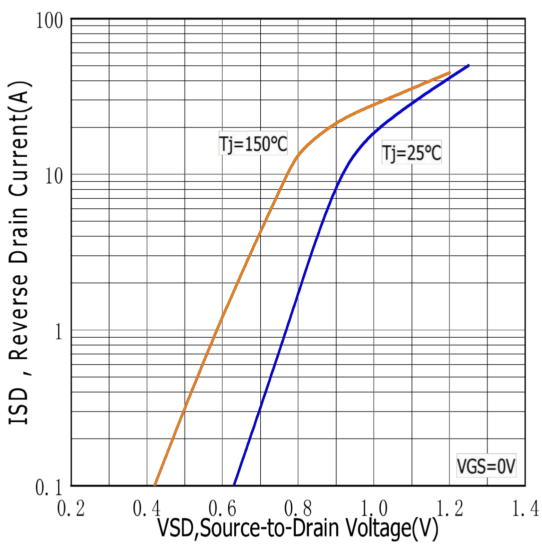


Figure.4 Typical Capacitance vs Drain to Source Voltage

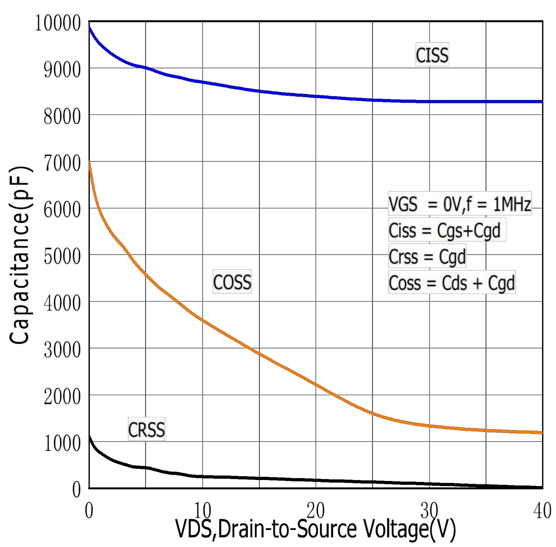


Figure.5 Typical Breakdown Voltage vs Junction Temperature

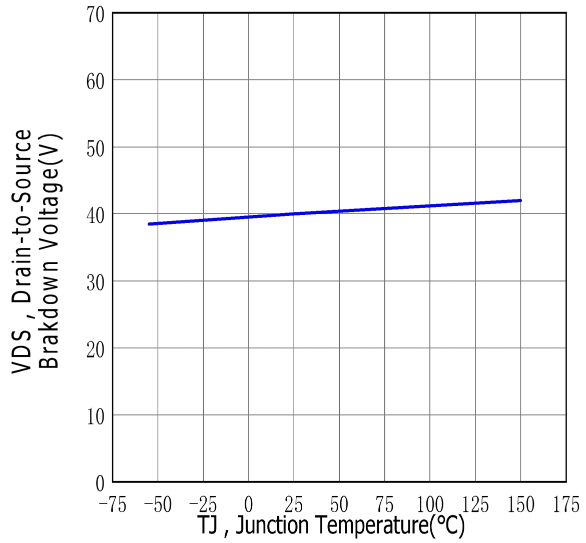


Figure.6 Typical Drain to Source on Resistance vs Junction Temperature

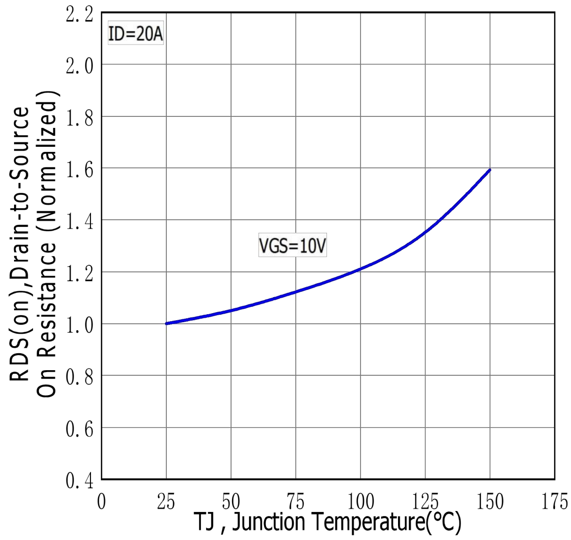


Figure.7 Maximum Forward Bias Safe Operating Area

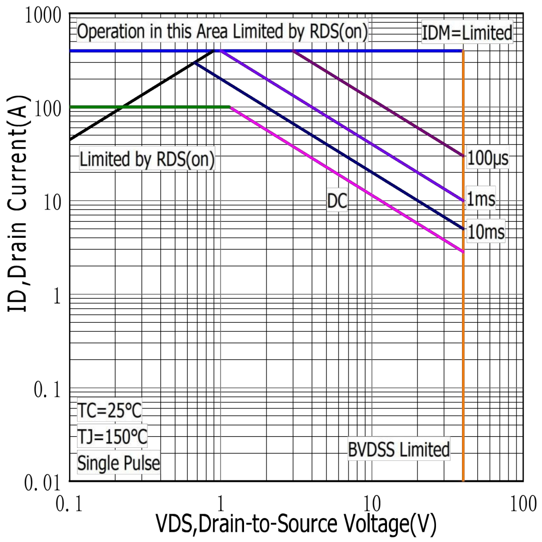
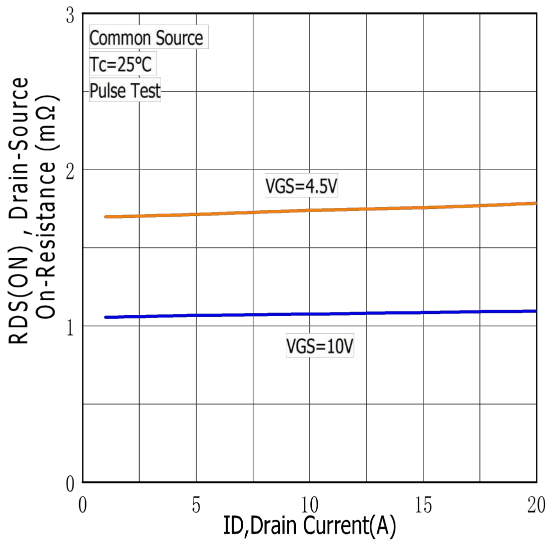


Figure.8 Typical Drain to Source ON Resistance vs Drain Current



■ Typical Performance Characteristics

Figure.9 Maximum EAS vs Channel Temperature

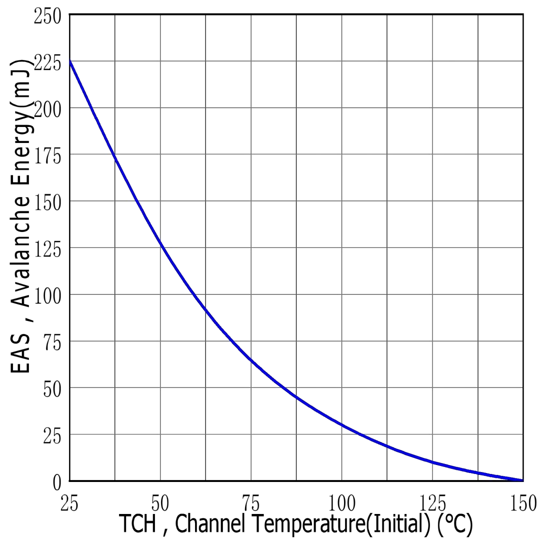


Figure.10 Typical Threshold Voltage vs Case Temperature

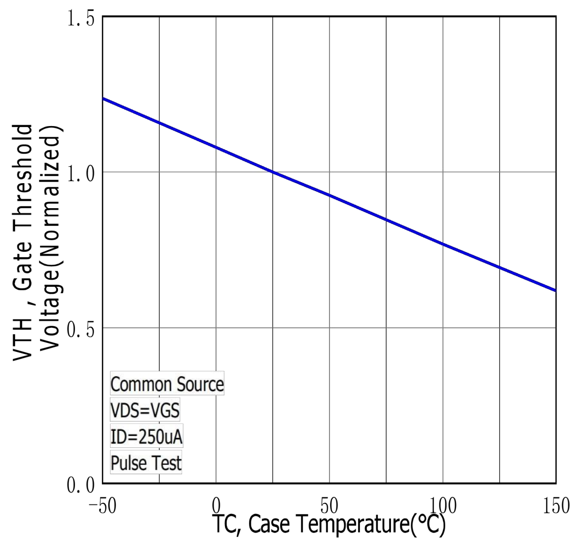


Figure.11 Typical Transfer Characteristics

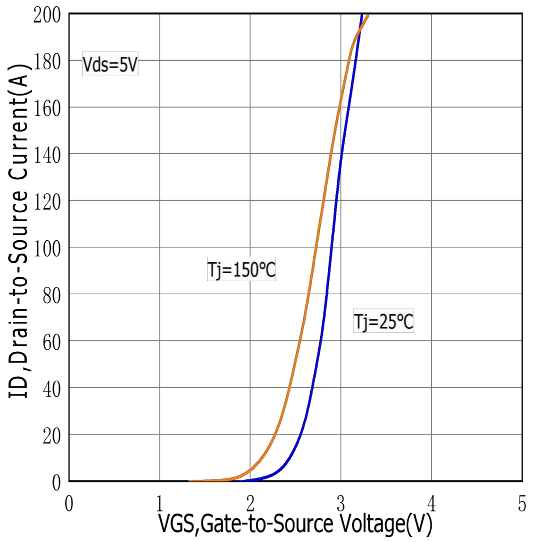


Figure.12 Maximum Power Dissipation vs Case Temperature

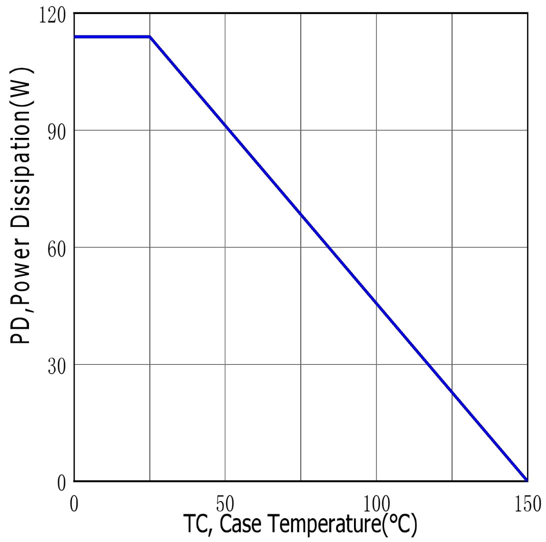
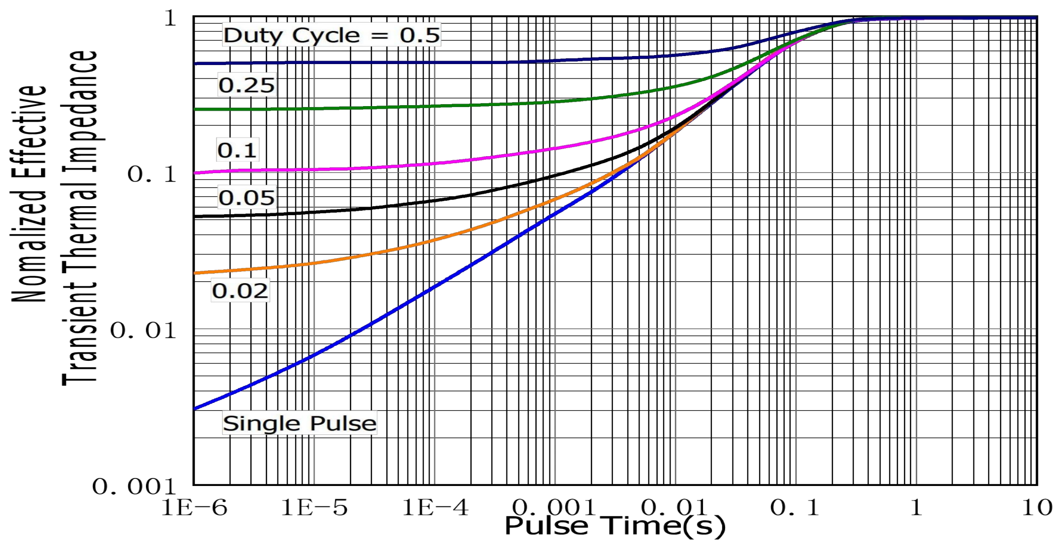


Figure.13 Maximum Effective Thermal Impedance , Junction to Case



■ **Test circuits and waveforms**

Figure A: Gate Charge Test Circuit & Waveforms

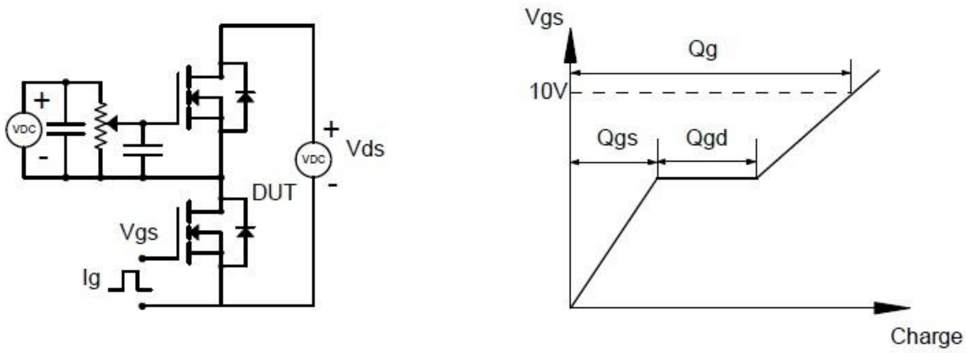


Figure B: Resistive Switching Test Circuit & Waveforms

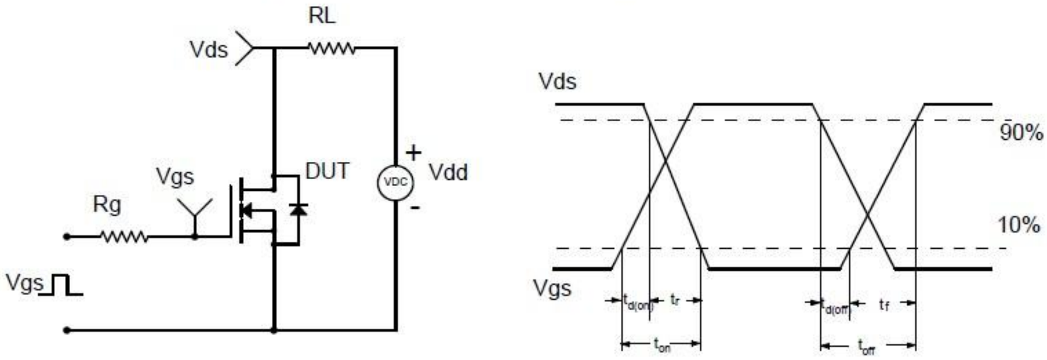


Figure C: Unclamped Inductive Switching (UIS) Test

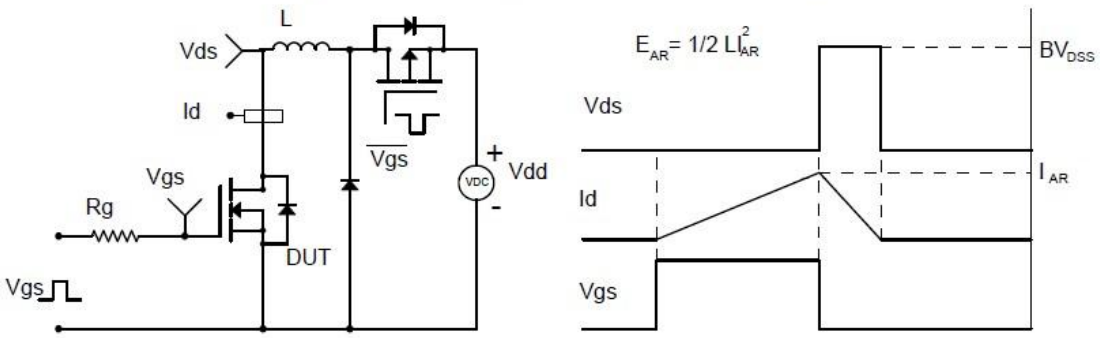
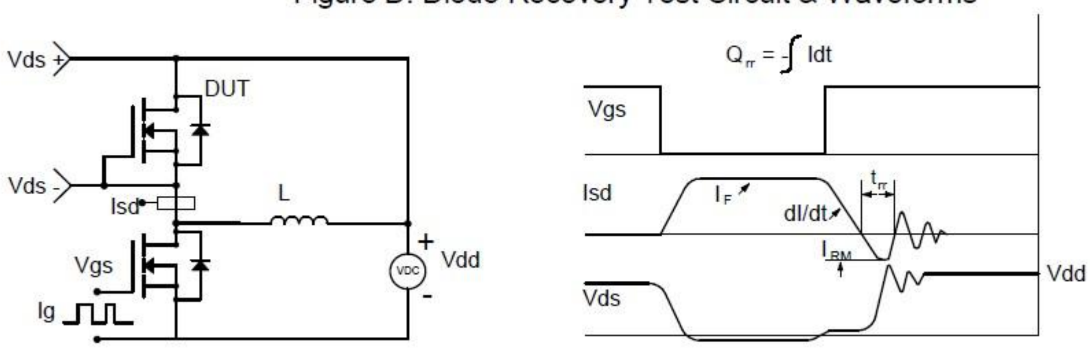
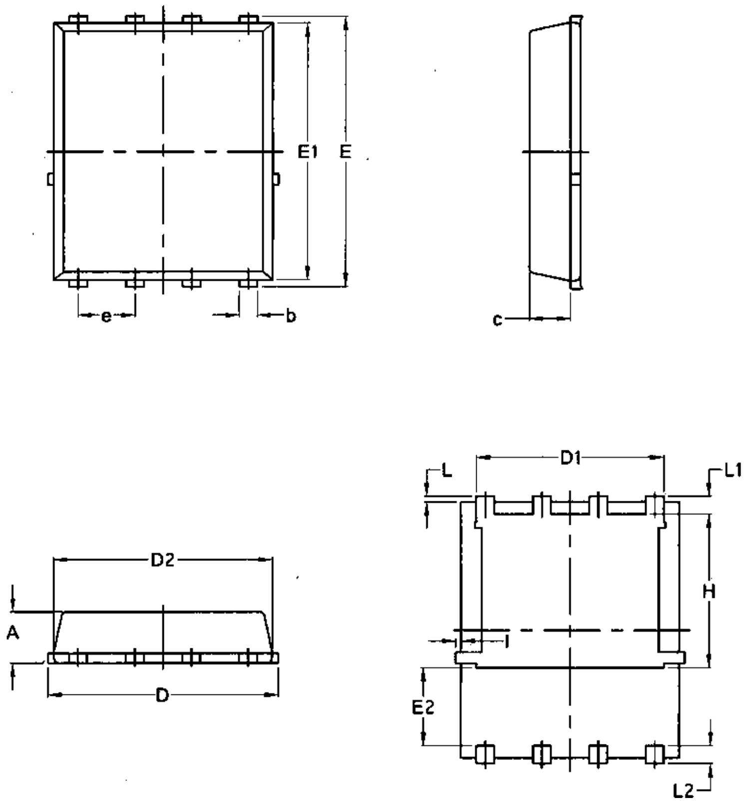


Figure D: Diode Recovery Test Circuit & Waveforms



Package Mechanical Data-PDFN5060-8L-JQ 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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