

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=30V$
- $I_D=60A$
- $R_{DS(on)}@V_{GS}=10V < 8.5m\Omega$
- $R_{DS(on)}@V_{GS}=4.5V < 14.5m\Omega$
- Fast switching speed
- Advanced Trench Technology
- Surface mount package

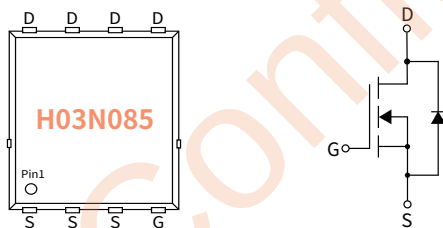
Applications

- BLDC
- Wireless impact
- Mobile phone fast charging

Mechanical Data

- Case: PDFN5060
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
30 V

Drain Current
60 Ampere

PDFN5060



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
PDFN5060	R3	0.09	5000	10000	80000	13"

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	30
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	60
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	160
Total Power Dissipation	P_D	W	72
Single pulse avalanche energy ⁽²⁾	EAS	mJ	42
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	1.72

● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	V	30	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	μA	—	—	1.0
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	V	1.0	1.6	2.5
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(ON)}	V _{GS} = 10V, I _D =25A	mΩ	—	5.8	8.5
		V _{GS} =4.5V, I _D =15A		—	9.3	14.5

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHZ	pF	—	1310	—
Output Capacitance	C _{oss}			—	165	—
Reverse Transfer Capacitance	C _{rss}			—	143	—

● Switching Parameters

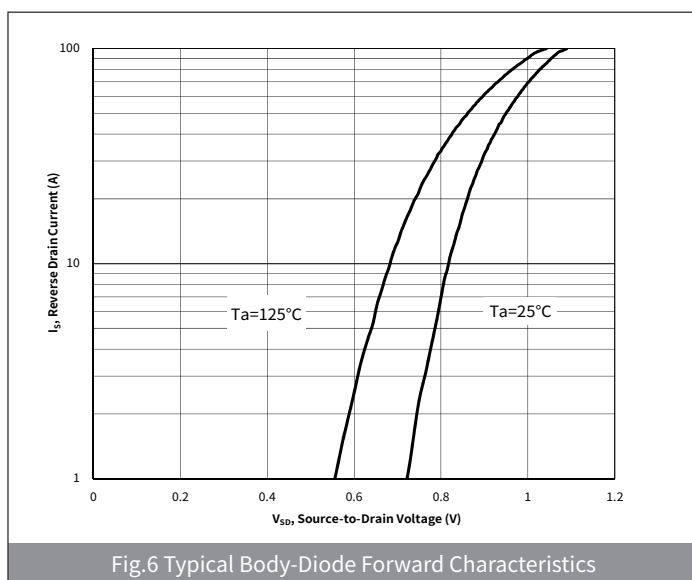
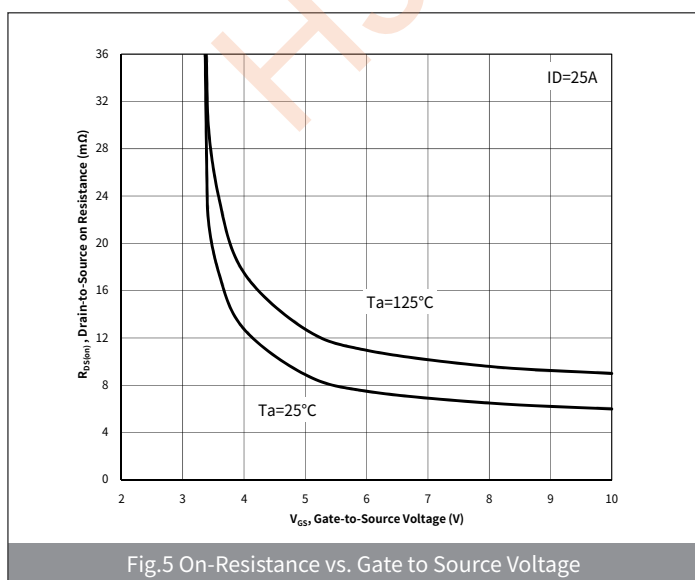
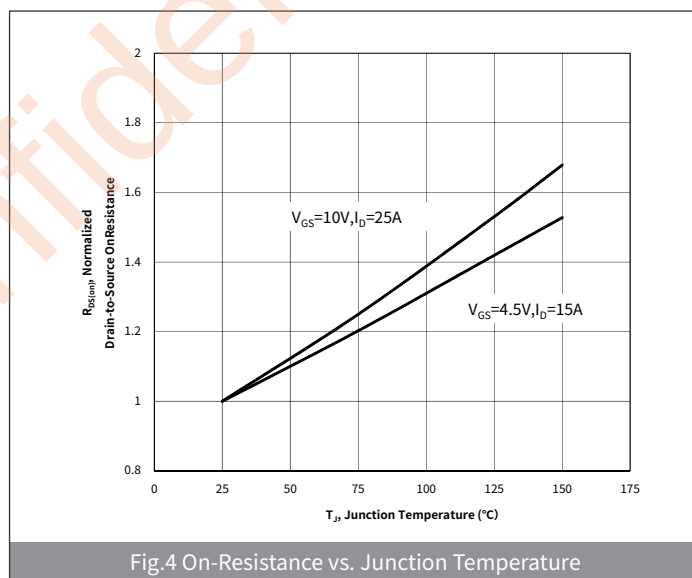
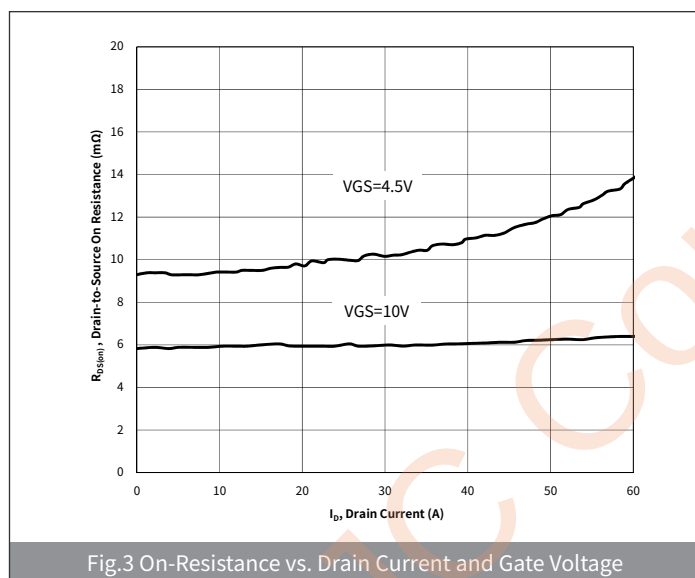
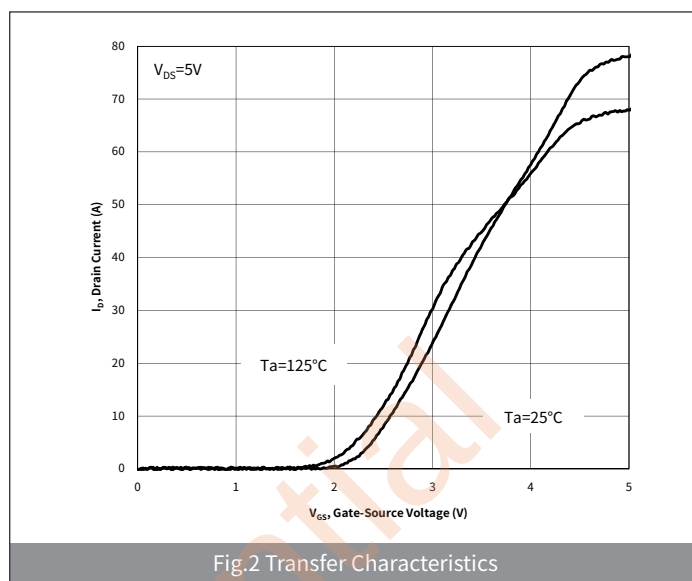
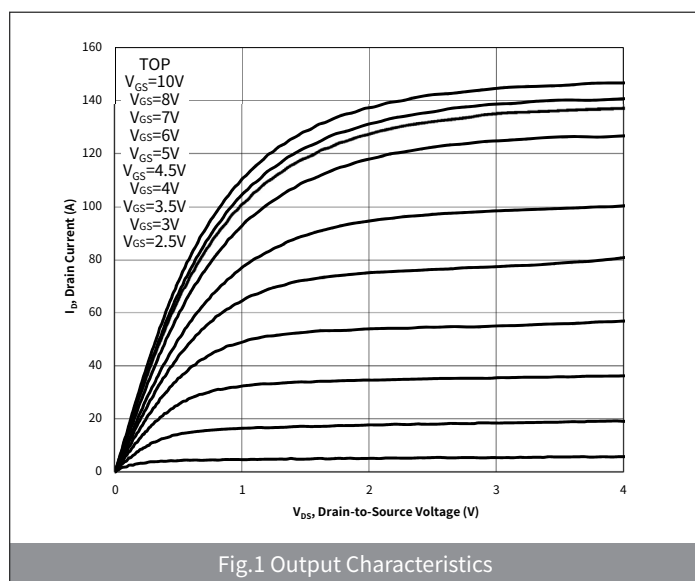
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =15V, I _D =15A, R _{GEN} =3Ω	nS	—	7	—
Turn-on Rise Time	t _r		nS	—	15	—
Turn-off Delay Time	t _{D(off)}		nS	—	25	—
Turn-off fall Time	t _f		nS	—	6	—
Total Gate Charge	Q _g	V _{DS} =15V, I _D =20A V _{GS} =10V	nC	—	23	—
Gate-Source Charge	Q _{gs}		nC	—	4.5	—
Gate-Drain Charge	Q _{gd}		nC	—	5.5	—

● Drian-Source Diode Characteristics

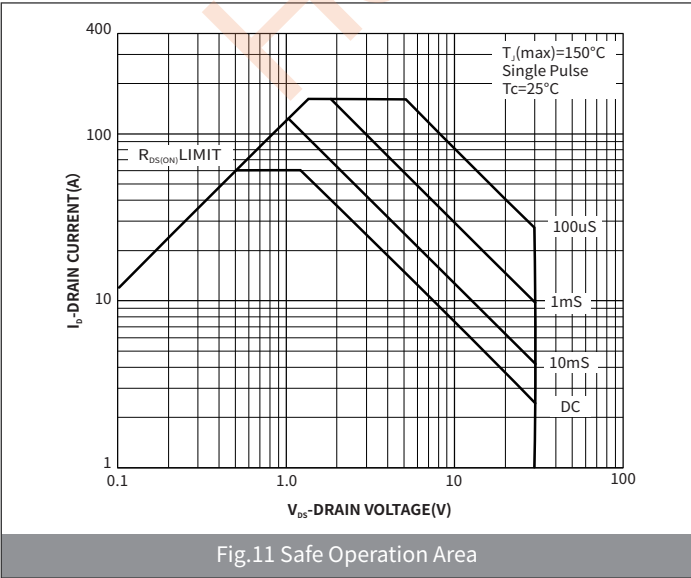
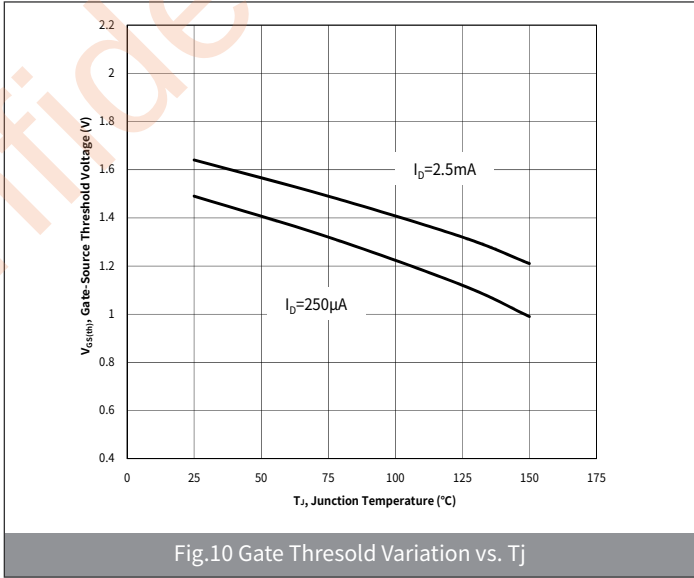
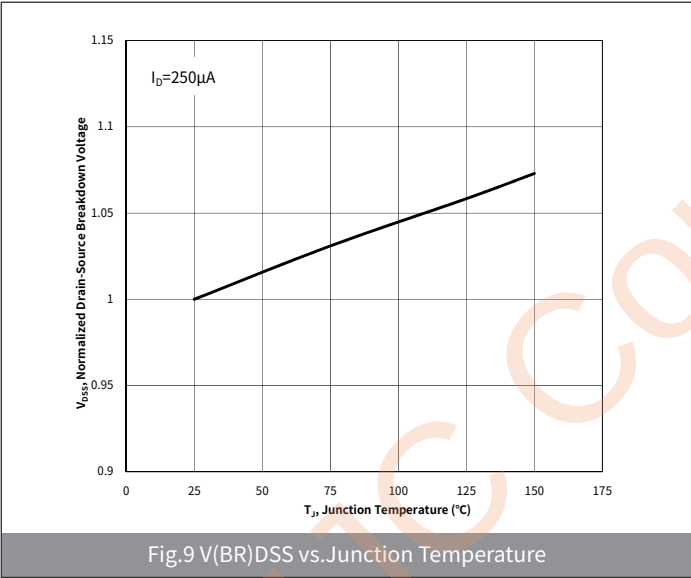
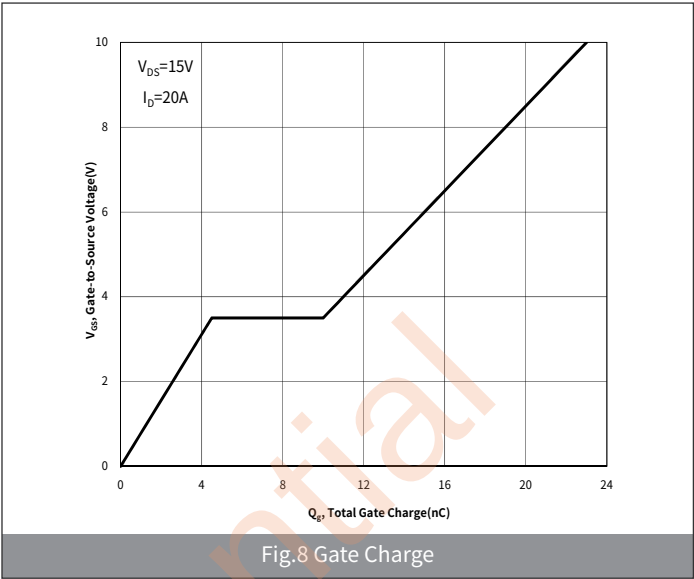
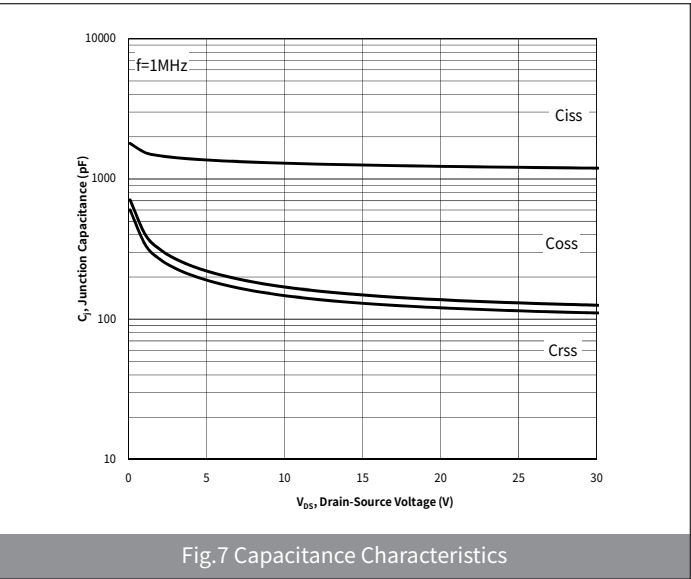
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =60A, V _{GS} =0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	60

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=15V,VG=10V,L=0.5mH,IAS=13A,Rg=25Ω.
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



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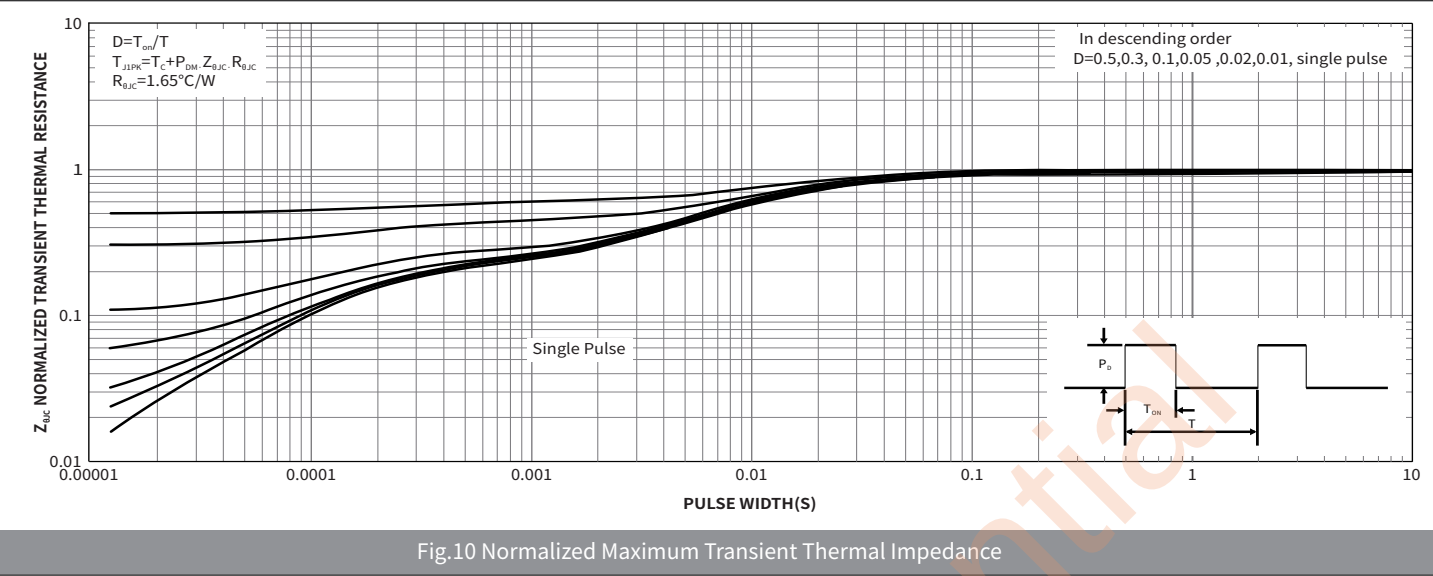
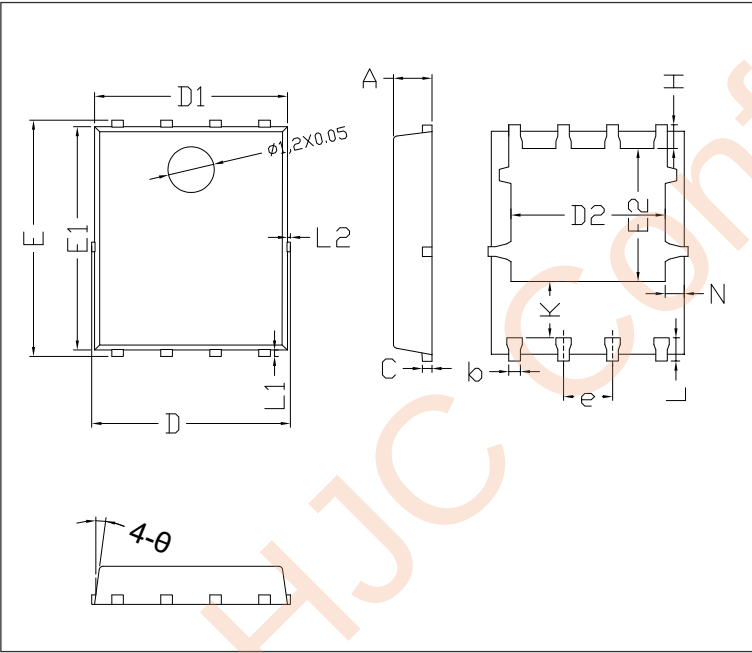


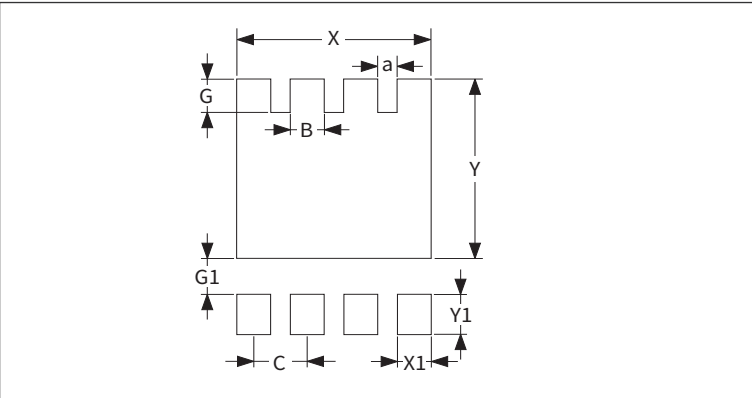
Fig.10 Normalized Maximum Transient Thermal Impedance

● Package Outline Dimensions (PDFN5060)



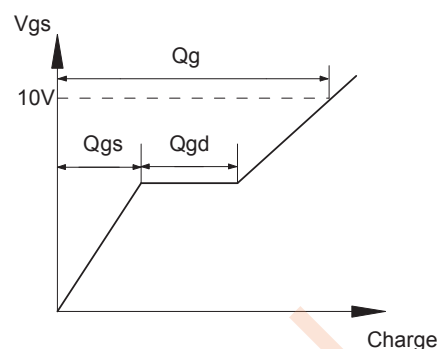
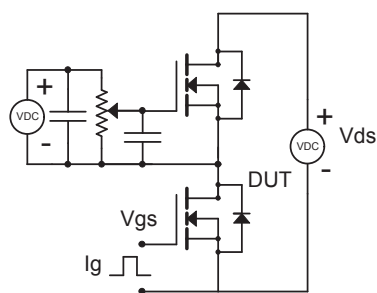
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.05	0.035	0.041
b	0.35	0.45	0.014	0.018
C	0.20	0.30	0.008	0.012
D	4.944	5.09	0.195	0.201
D1	4.82	4.97	0.190	0.196
D2	3.90	4.20	0.154	0.165
e	1.17	1.37	0.046	0.054
E	5.97	6.13	0.236	0.241
E1	5.67	5.82	0.223	0.229
E2	3.35	3.65	0.132	0.144
H	0.57	0.72	0.023	0.029
K	1.19	1.39	0.047	0.056
L	0.56	0.71	0.022	0.028
L1	0.06	0.20	0.002	0.008
L2	-	0.12	-	0.005
N	0.40	0.60	0.016	0.024
θ	9°	13°	9°	13°

● Suggested Pad Layout

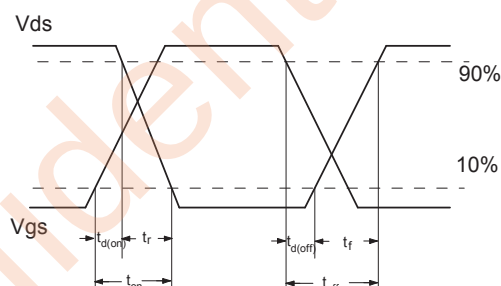
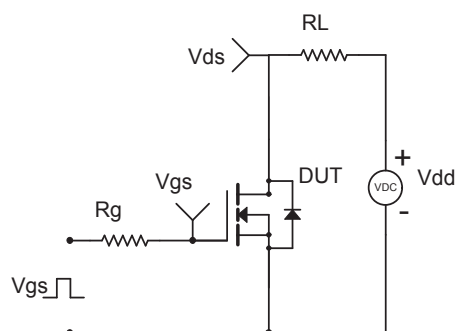


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a	0.46	0.48	0.0184	0.0192
B	0.70	0.90	0.028	0.036
C	1.17	1.37	0.0468	0.0548
G	0.75	0.95	0.03	0.038
G1	0.80	1.00	0.032	0.04
X	4.50	4.70	0.180	0.188
X1	0.70	0.90	0.028	0.036
Y	4.40	4.60	0.176	0.184
Y1	0.90	1.10	0.036	0.044

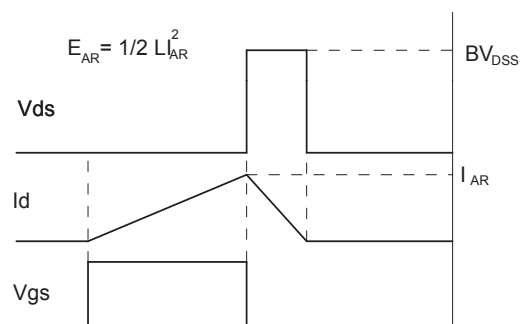
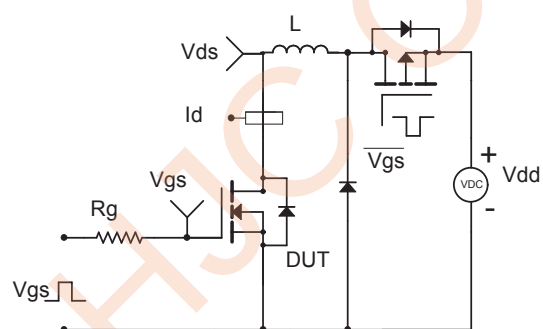
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4. Diode Recovery Test Circuit & Waveforms

