

PDFN5060 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-30V$
- $I_D=-90A$
- $R_{DS(on)}@V_{GS}=-10V < 6.5m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 10.5m\Omega$
- High density cell design for ultra low Rdson
- Fast Switching Speedze
- Advanced Trench Technology

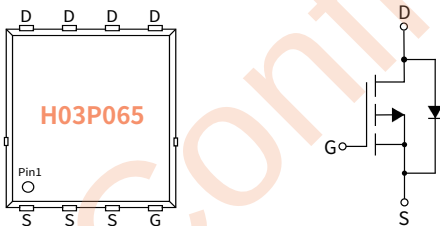
Applications

- Lithium battery protection
- 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

-90 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	-90
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-320
Total Power Dissipation	P_D	W	62.5
Single pulse avalanche energy ⁽²⁾	EAS	mJ	169
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	1.15

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

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	V	30	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	μA	—	—	-1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	V	-1.0	-1.6	-2.5
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-30A$	m Ω	—	4.0	6.5
	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-20A$		—	7.0	10.5

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	pF	—	3366	—
Output Capacitance	C_{oss}			—	530	—
Reverse Transfer Capacitance	C_{rss}			—	470	—

● Switching Parameters

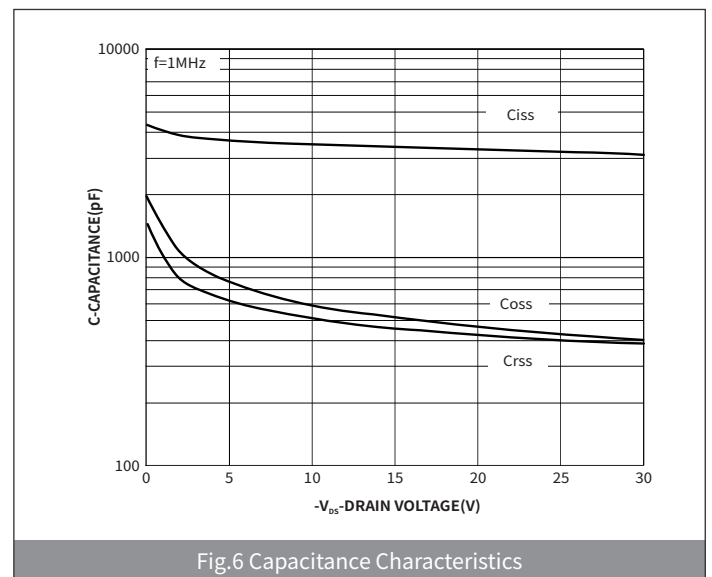
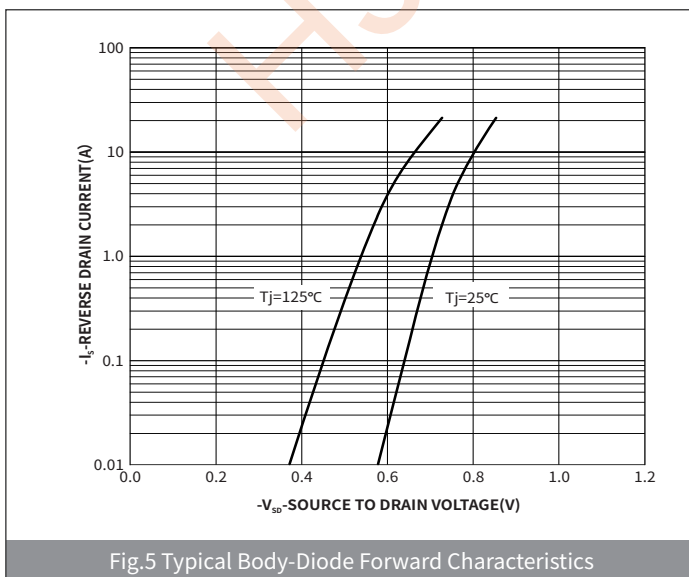
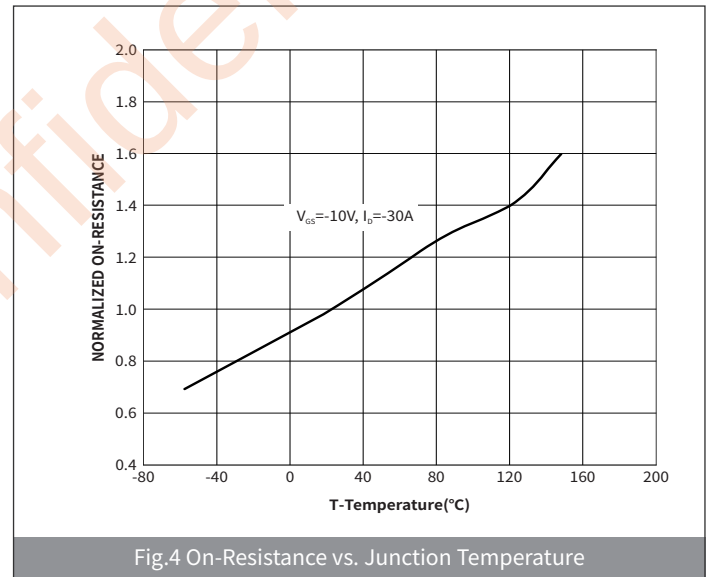
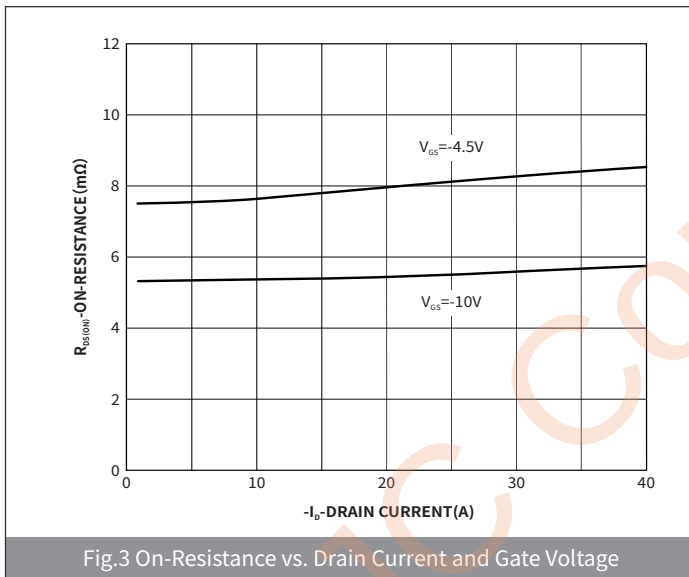
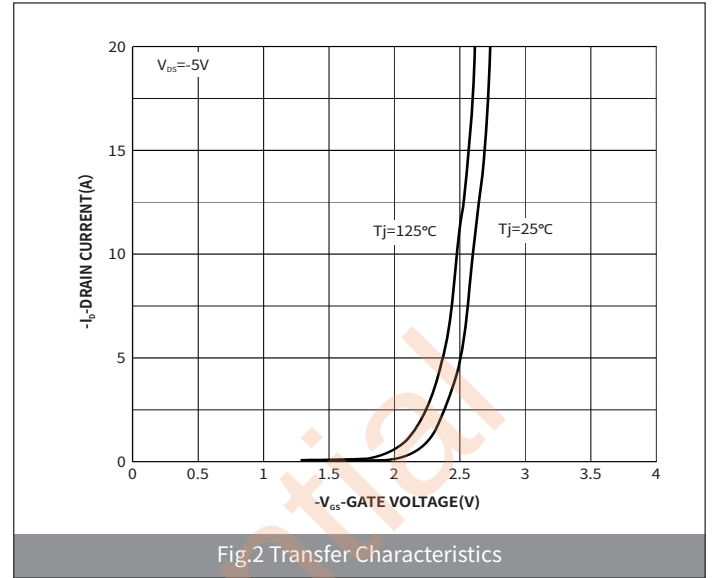
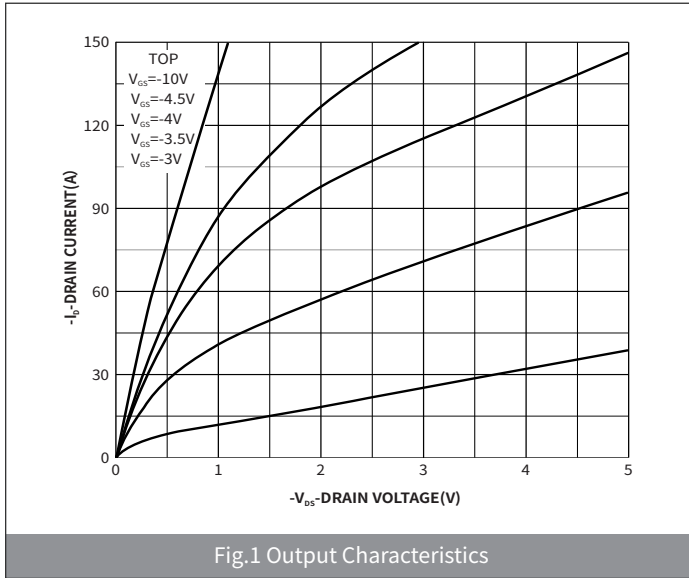
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-15V, I_D=-10A, R_{GEN}=3\Omega$	nS	—	7	—
Turn-on Rise Time	t_r		nS	—	6	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	112	—
Turn-off fall Time	t_f		nS	—	78	—
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-10A, V_{GS}=-10V$	nC	—	59	—
Gate-Source Charge	Q_{gs}		nC	—	10	—
Gate-Drain Charge	Q_{gd}		nC	—	14	—

● Drian-Source Diode Characteristics

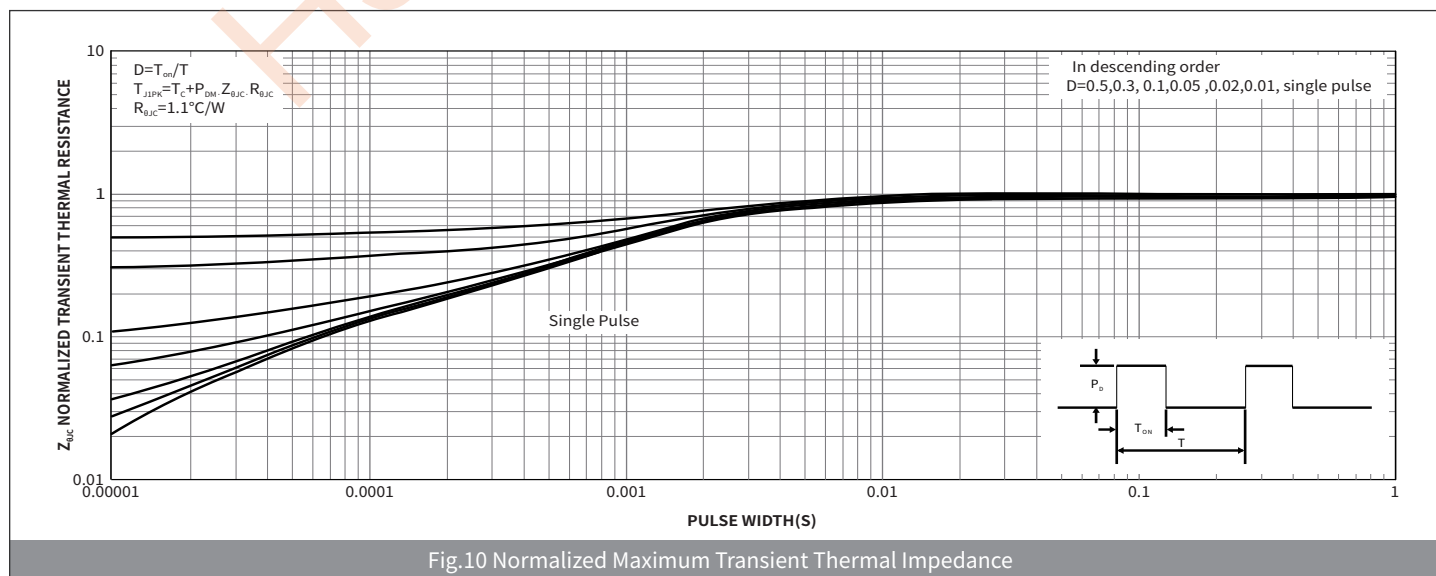
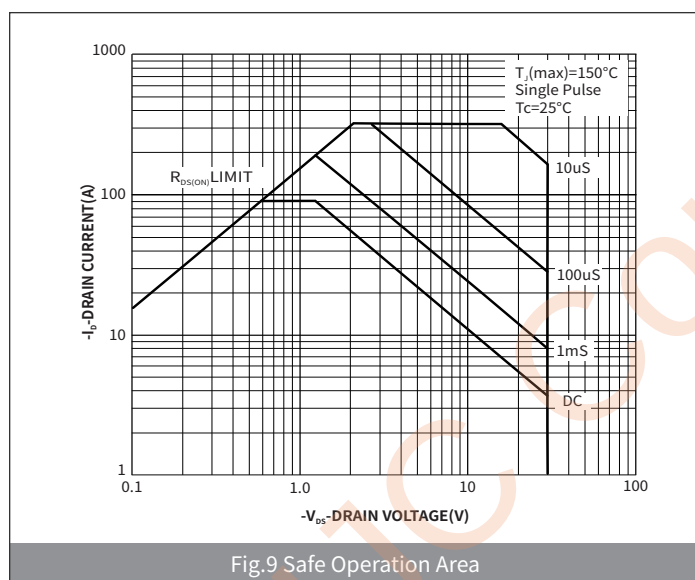
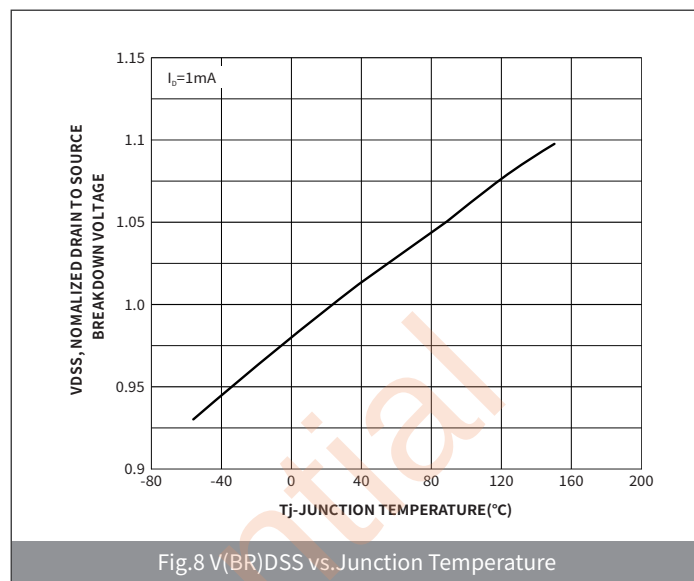
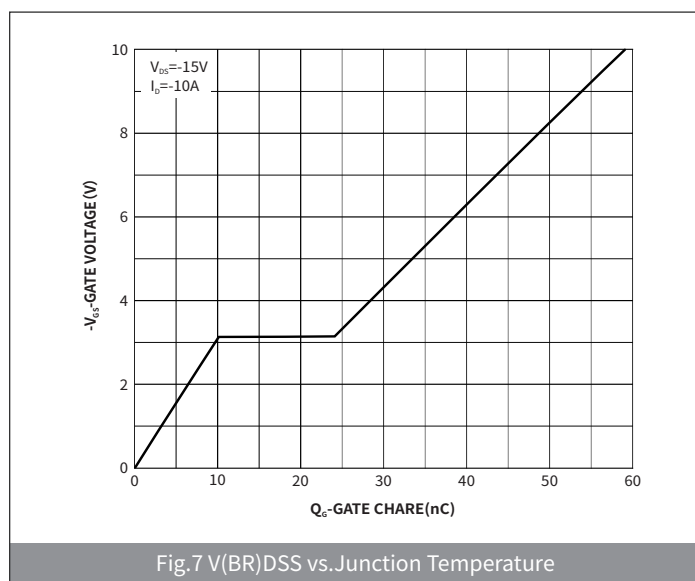
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-90A, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-90

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=-25V,VG=-10V,L=0.5mH,IAS=-26A,Rg=25Ω .
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

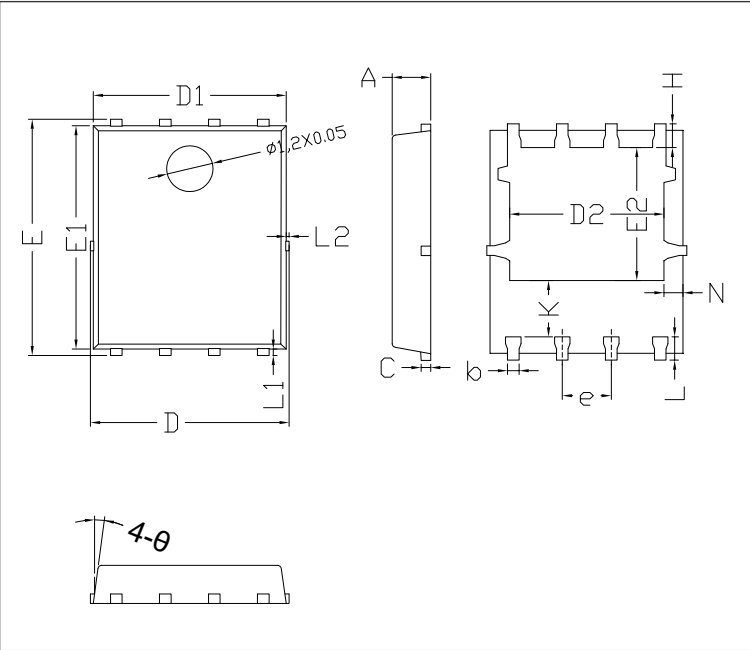
● **Ratings And Characteristics Curves** ($T_a=25^\circ\text{C}$ Unless otherwise specified)



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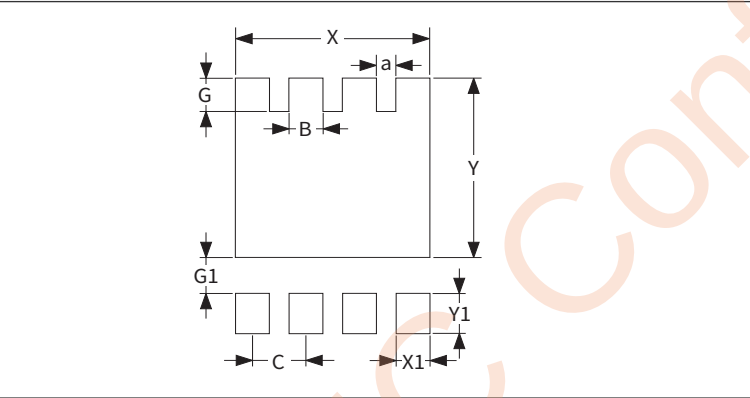


Package Outline Dimensions (PDFN5060)



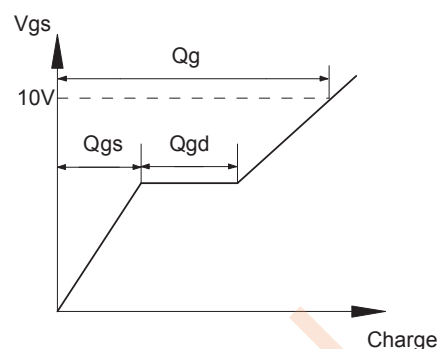
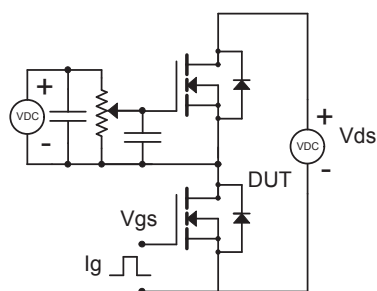
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.05	0.035	0.041
b	0.35	0.45	0.014	0.018
C	0.20	0.30	0.008	0.012
D	4.944	5.09	0.195	0.201
D1	4.82	4.97	0.190	0.196
D2	3.90	4.20	0.154	0.165
e	1.17	1.37	0.046	0.054
E	5.97	6.13	0.236	0.241
E1	5.67	5.82	0.223	0.229
E2	3.35	3.65	0.132	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

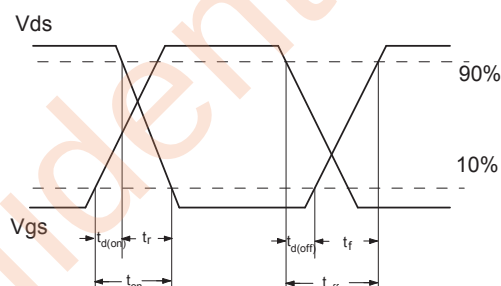
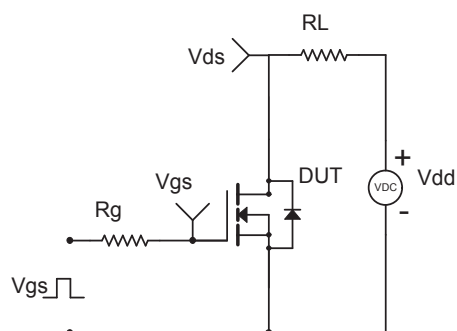


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a	0.46	0.48	0.0184	0.0192
B	0.70	0.90	0.028	0.036
C	1.17	1.37	0.0468	0.0548
G	0.75	0.95	0.03	0.038
G1	0.80	1.00	0.032	0.04
X	4.50	4.70	0.180	0.188
X1	0.70	0.90	0.028	0.036
Y	4.40	4.60	0.176	0.184
Y1	0.90	1.10	0.036	0.044

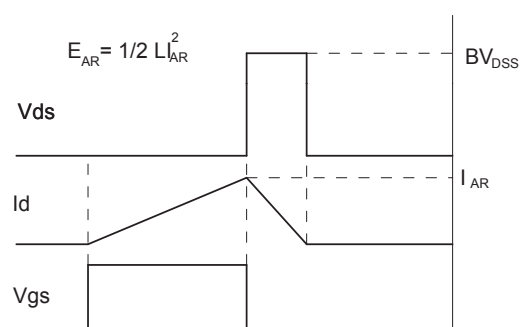
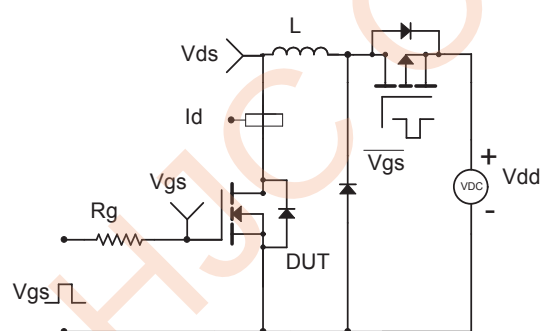
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

