

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=20V$
- $I_D=20A$
- $R_{DS(on)}@V_{GS}=4.5V < 7.5m\Omega$
- $R_{DS(on)}@V_{GS}=2.5V < 10m\Omega$
- Low On-Rdson
- Fast Switching Speedze
- Advancedz Trench Technology

Drain-source Voltage
20 V
Drain Current
20 Ampere

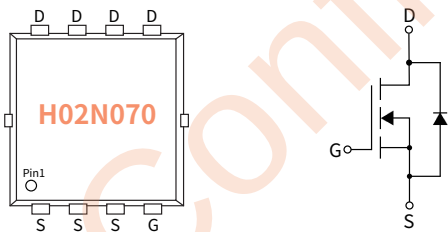
Applications

- Load Switch
- Battery Protection
- Uninterruptible Power Supply

Mechanical Data

- Case: PDFN3030
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
PDFN3030	R3	0.0218	5000	10000	80000	13"

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	20
Gate-source Voltage	V_{GS}	V	± 12
Drain Current	I_D	A	20
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	60
Total Power Dissipation	P_D	W	31
Single pulse avalanche energy ⁽²⁾	EAS	mJ	36
Junction temperature	T_J	°C	150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	4.03

● 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	20	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	V	0.4	0.7	1.2
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=20A$	m Ω	—	5.5	7.5
		$V_{GS}=2.5V, I_D=10A$		—	7	10

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	pF	—	1895	—
Output Capacitance	C_{oss}			—	216	—
Reverse Transfer Capacitance	C_{rss}			—	191	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DD}=10V, I_D=4A, R_{GEN}=3\Omega$	nS	—	10	—
Turn-on Rise Time	t_r		nS	—	30	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	40	—
Turn-off fall Time	t_f		nS	—	16	—
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=4A, V_{GS}=4.5V$	nC	—	16	—
Gate-Source Charge	Q_{gs}		nC	—	3	—
Gate-Drain Charge	Q_{gd}		nC	—	5.5	—

● Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	20

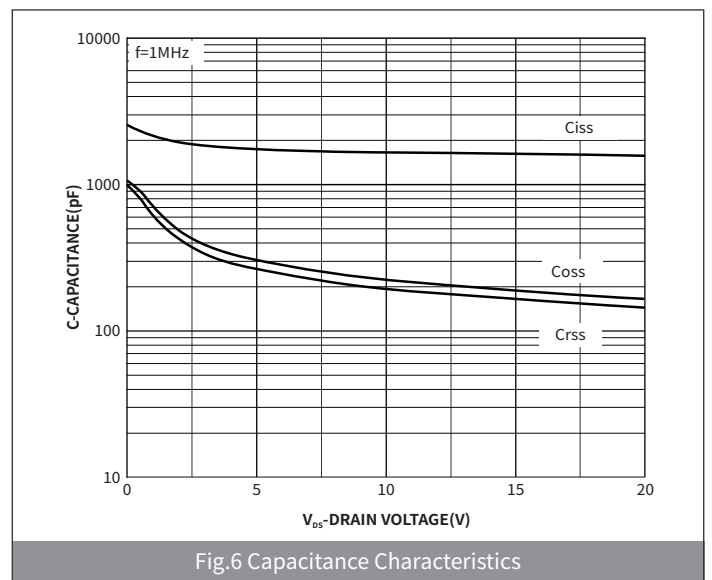
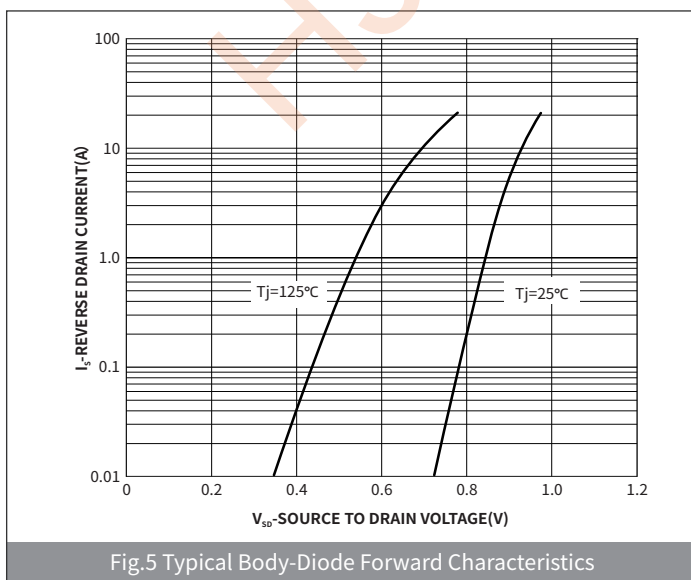
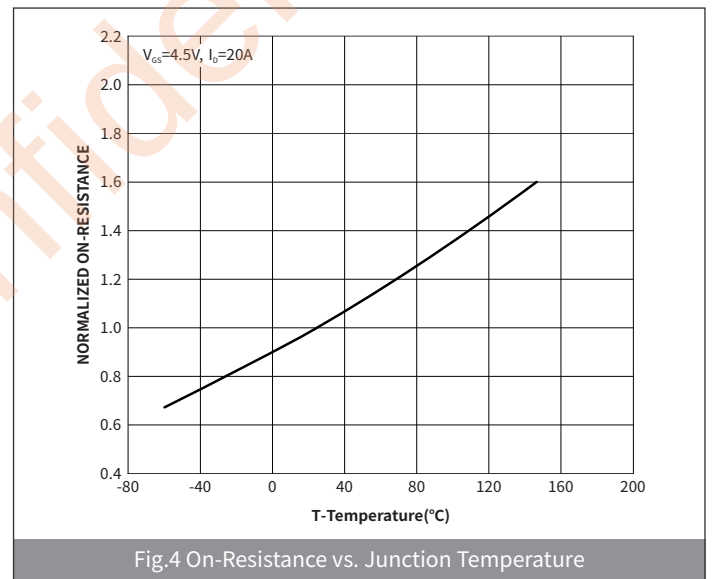
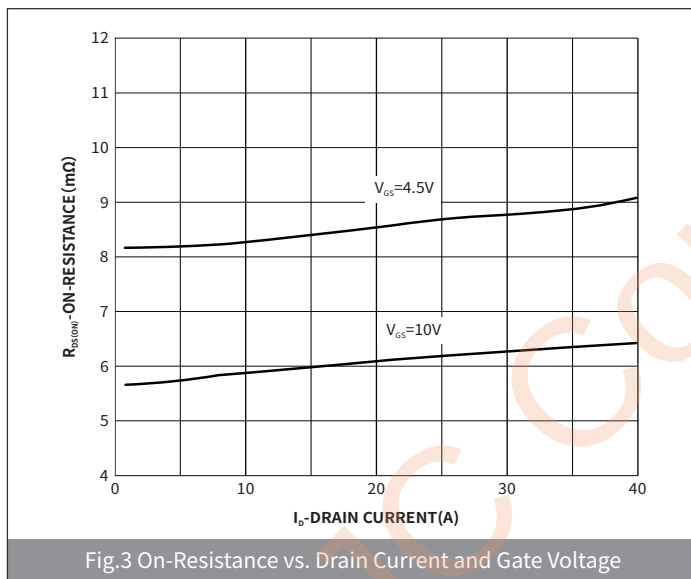
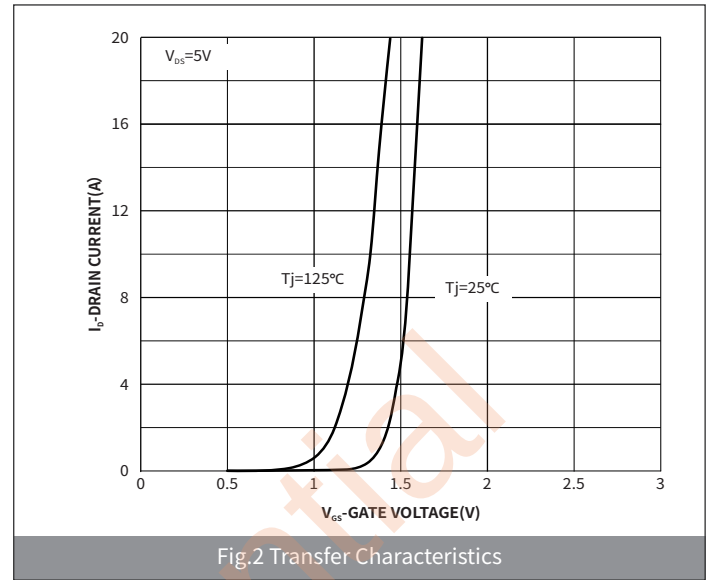
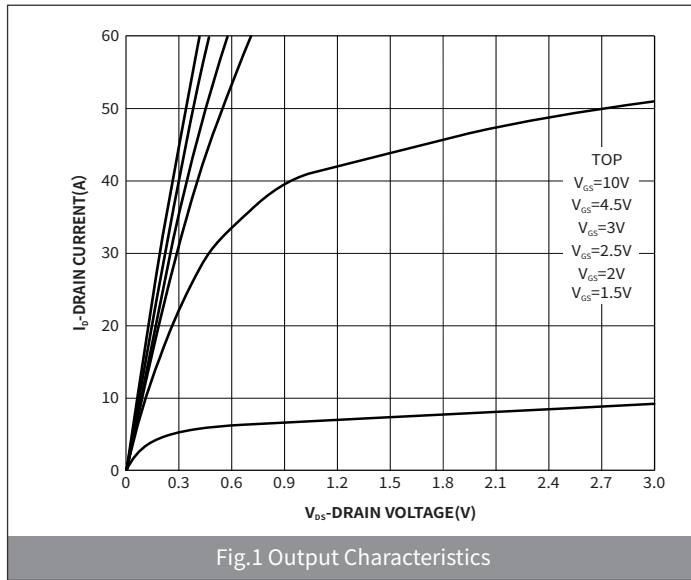
Note :

(1) Repetitive Rating: Pulse width limited by maximum junction temperature.

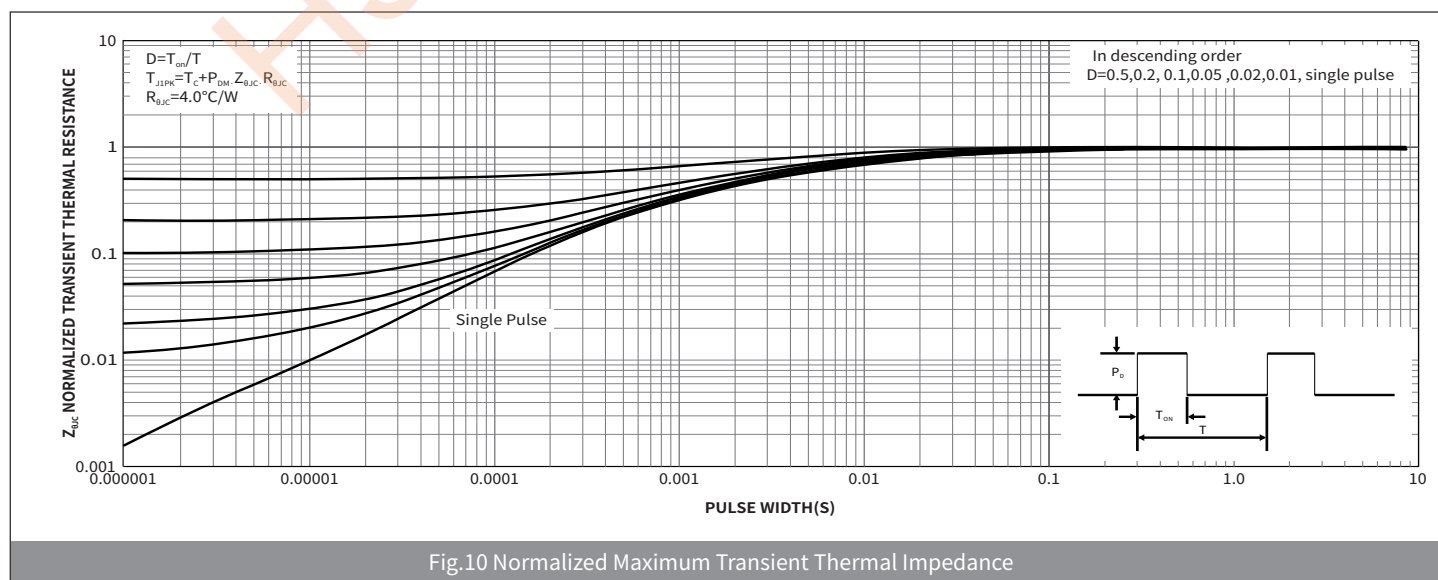
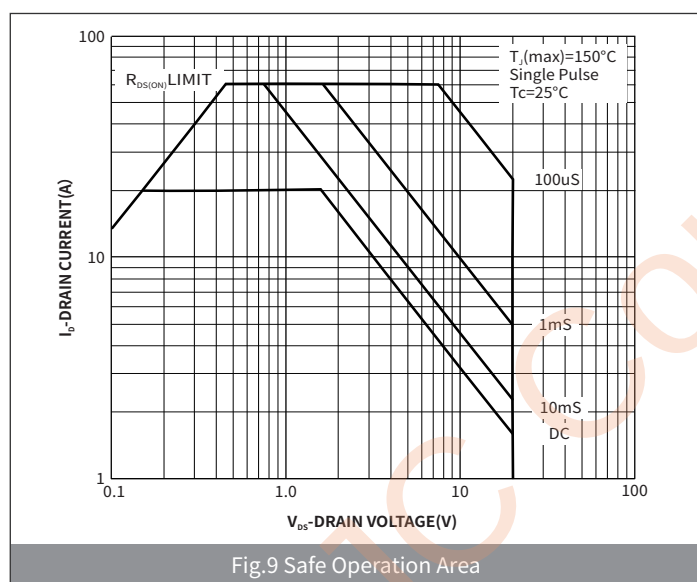
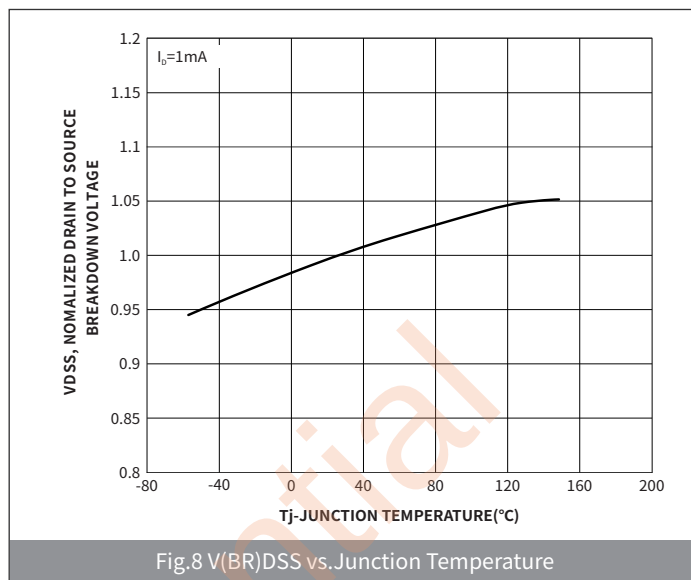
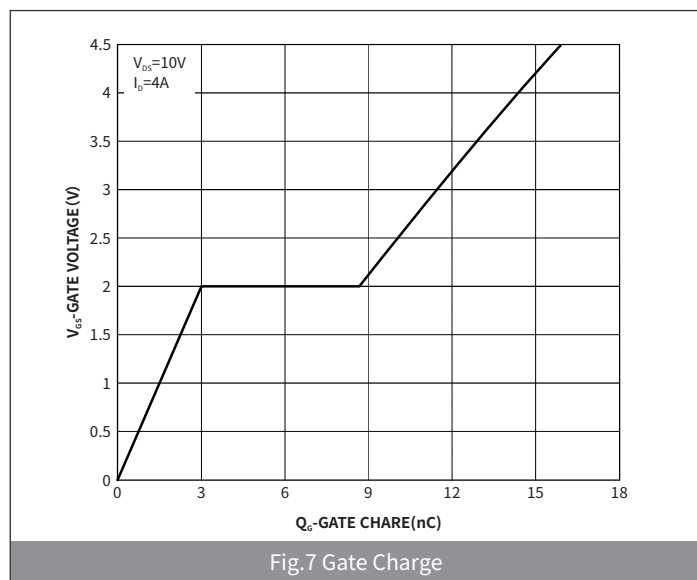
(2) EAS condition : Tj=25°C ,VDD=10V,VG=10V,L=0.5mH,IAS=12A,Rg=25 Ω .

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

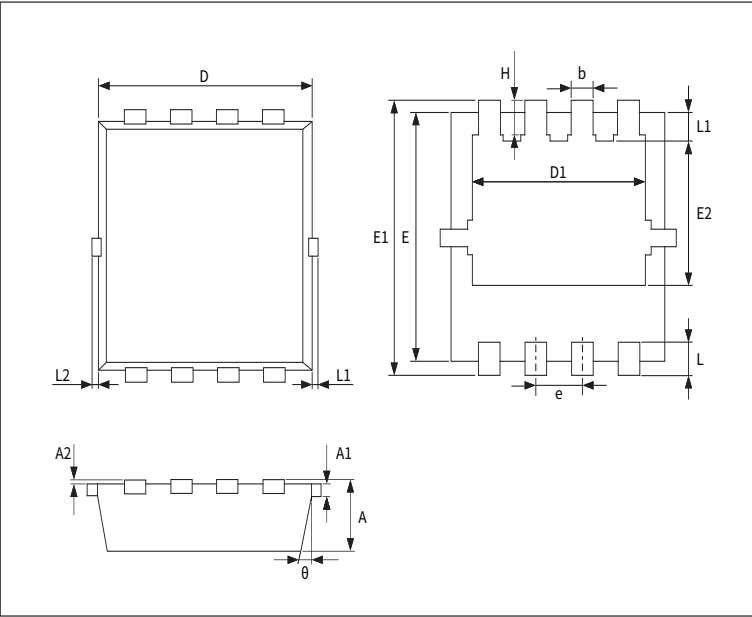
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



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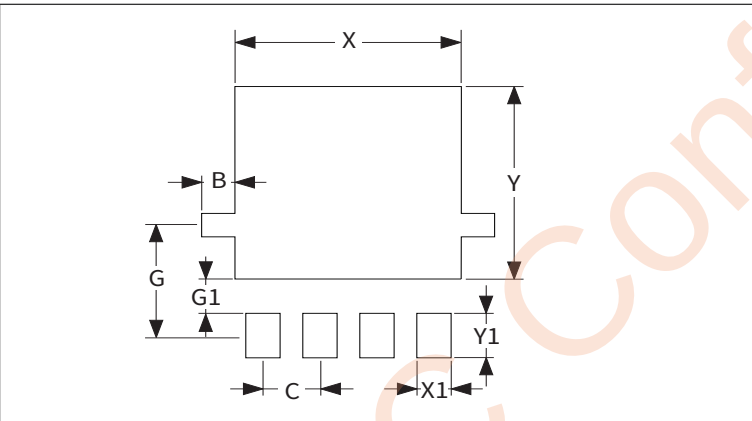


Package Outline Dimensions (PDFN3030)



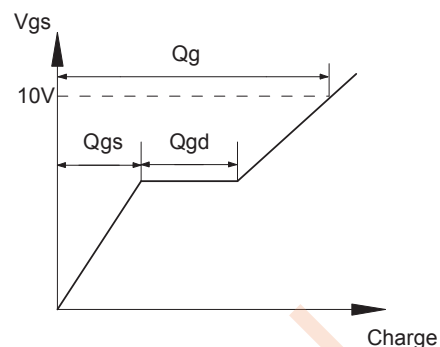
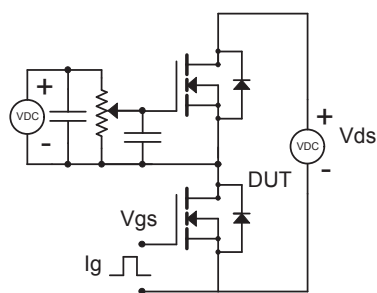
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.900	0.026	0.035
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.90	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.200	0.114	0.126
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

Suggested Pad Layout

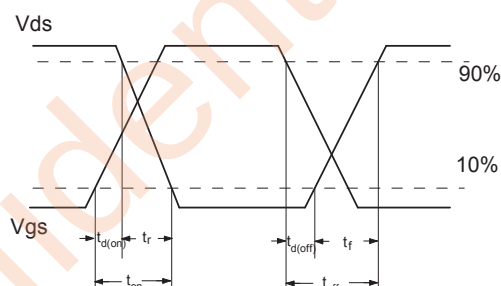
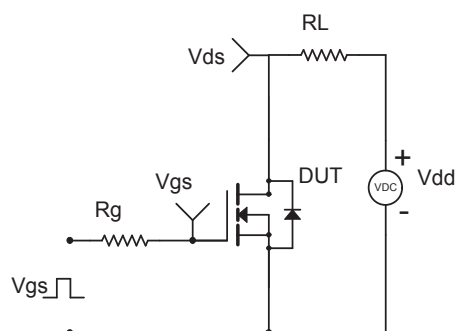


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
B	0.34	0.36	0.013	0.014
C	0.55	0.75	0.022	0.030
G	1.35	1.55	0.054	0.062
G1	0.37	0.57	0.014	0.022
X	2.55	2.75	0.102	0.110
X1	0.30	0.50	0.012	0.020
Y	2.40	2.60	0.096	0.102
Y1	0.46	0.66	0.018	0.026

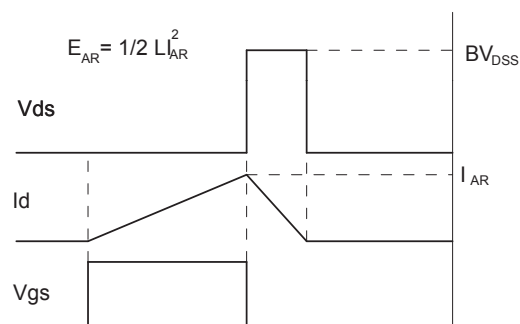
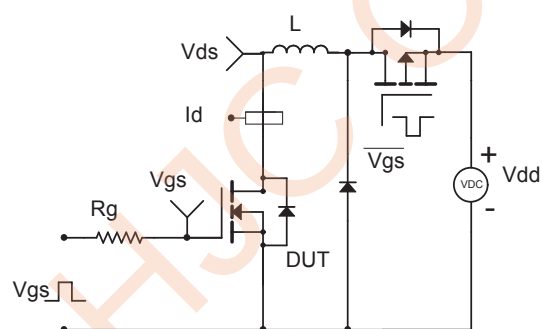
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

