

PDFN3030 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-30V$
- $I_D=-50A$
- $R_{DS(on)}@V_{GS}=-10V < 10m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 14m\Omega$
- 100% Avalanche Tested
- Voltage controlled small signal switch
- Advanced Trench Technology

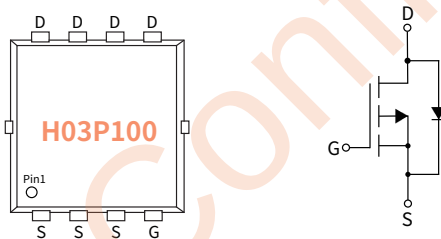
Applications

- Lithium Battery Protection
- Wireless Impact
- Mobile Phone Fast Charging

Mechanical Data

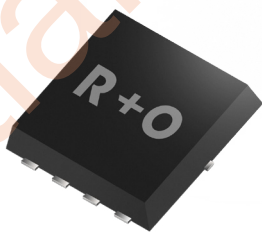
- Case: PDFN3030
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Drain-source Voltage
-30 V
Drain Current
-50 Ampere

PDFN3030



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	-30
Gate-source Voltage	V_{GS}	V	± 20
Drain Current	I_D	A	-50
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-168
Total Power Dissipation	P_D	W	37
Single pulse avalanche energy ⁽²⁾	EAS	mJ	45
Junction temperature	T_J	°C	150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	3.37

● 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	-1.7	-2.5
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-30A$	m Ω	—	6.3	10
		$V_{GS}=-4.5V, I_D=-15A$		—	11.5	14

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	pF	—	2396	—
Output Capacitance	C_{oss}			—	333	—
Reverse Transfer Capacitance	C_{rss}			—	291	—

● Switching Parameters

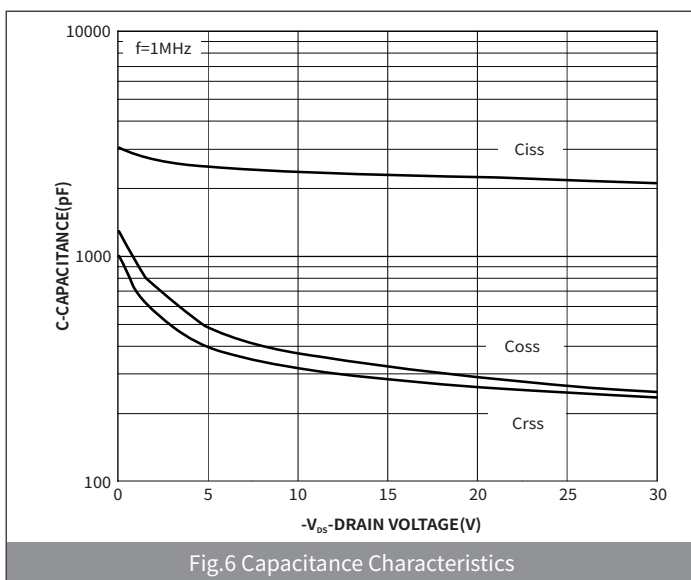
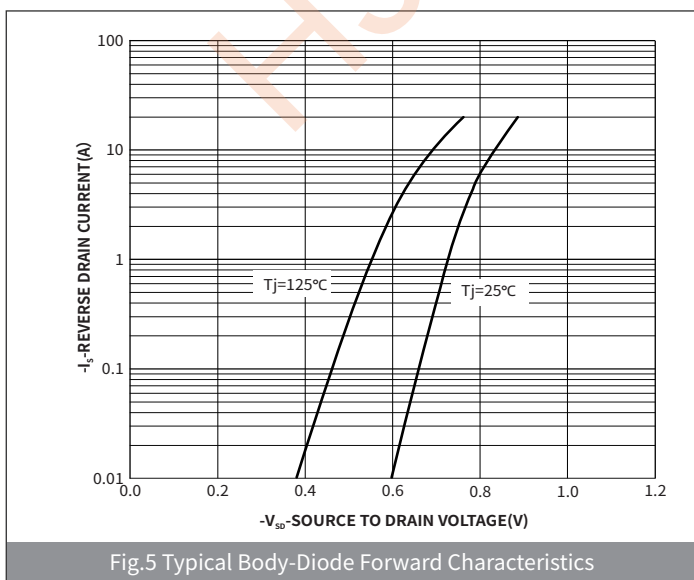
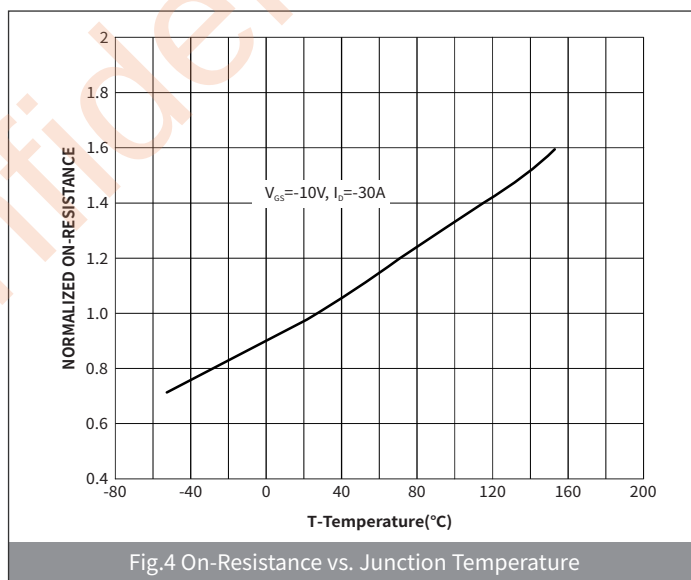
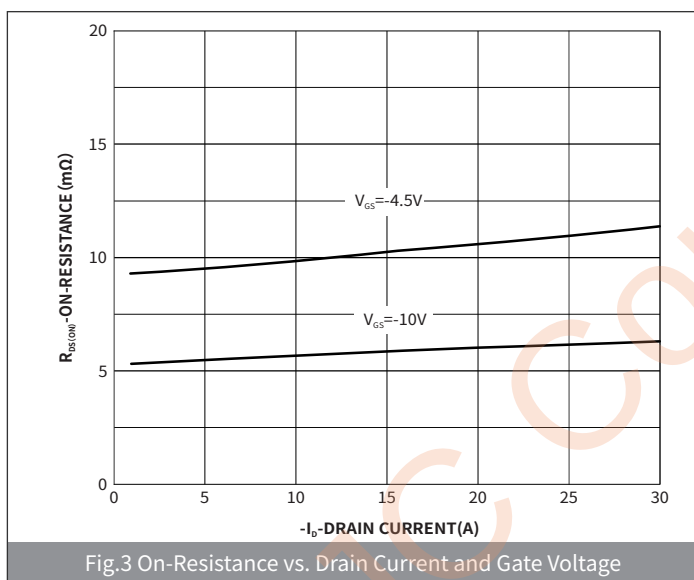
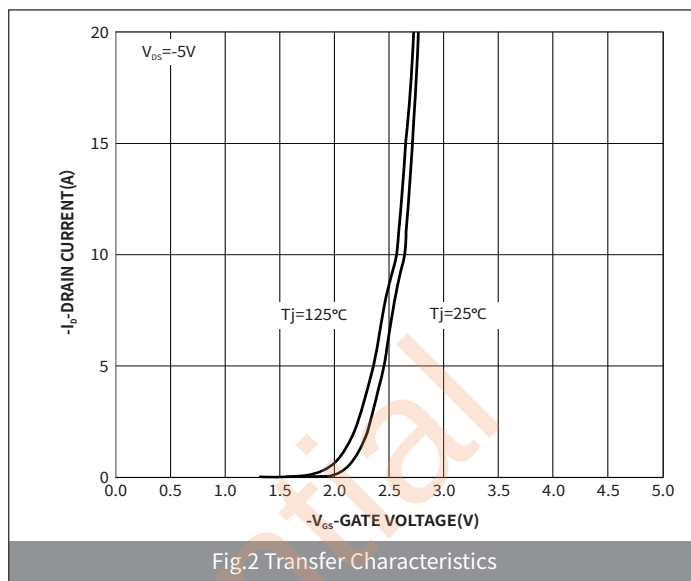
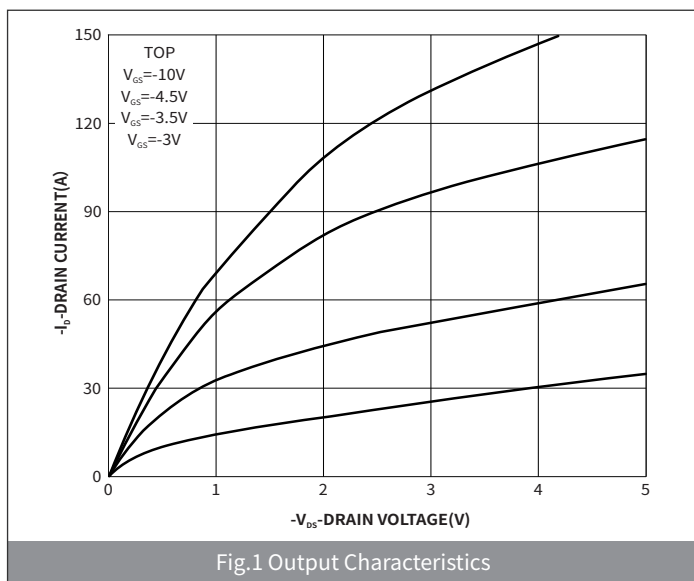
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-15V, I_D=-30A, R_{GEN}=3\Omega$	nS	—	14.1	—
Turn-on Rise Time	t_r		nS	—	20	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	94	—
Turn-off fall Time	t_f		nS	—	65	—
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-30A, V_{GS}=-10V$	nC	—	30	—
Gate-Source Charge	Q_{gs}		nC	—	5	—
Gate-Drain Charge	Q_{gd}		nC	—	7.5	—

● Drian-Source Diode Characteristics

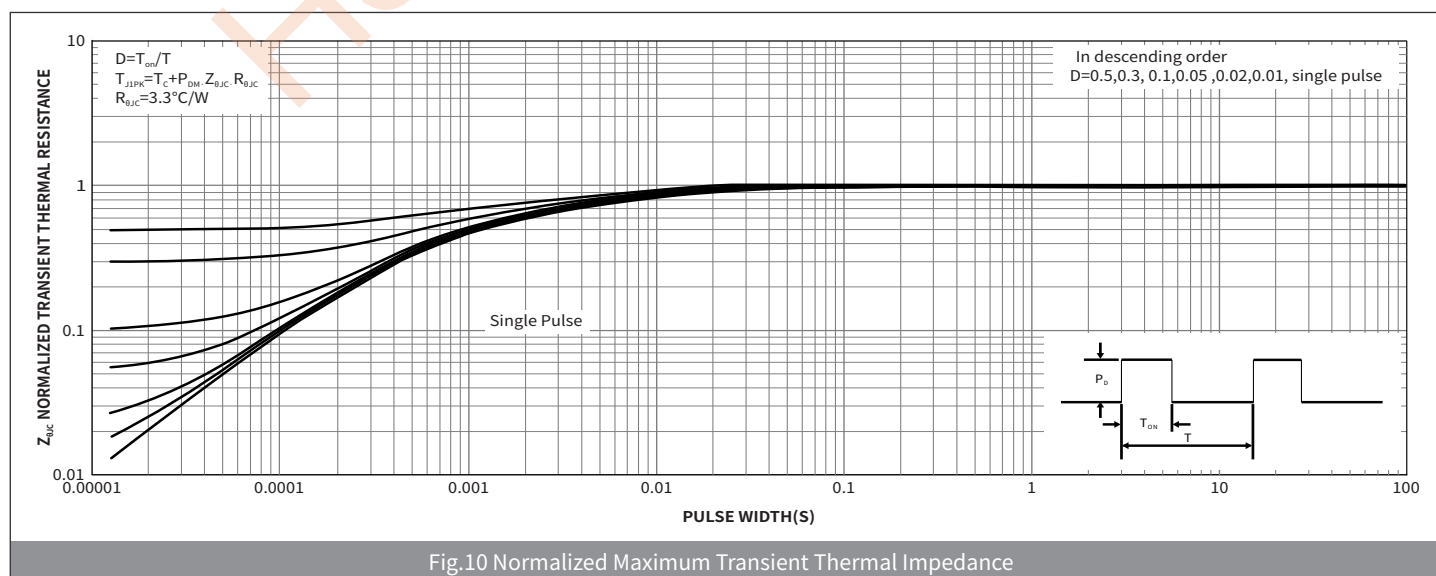
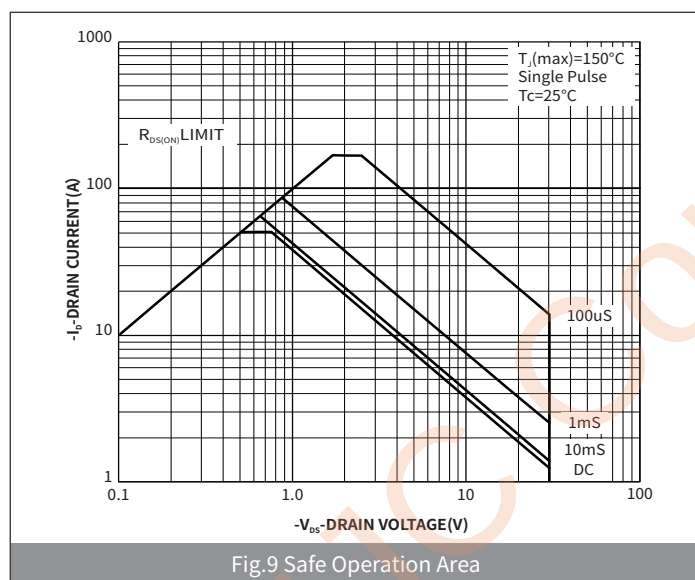
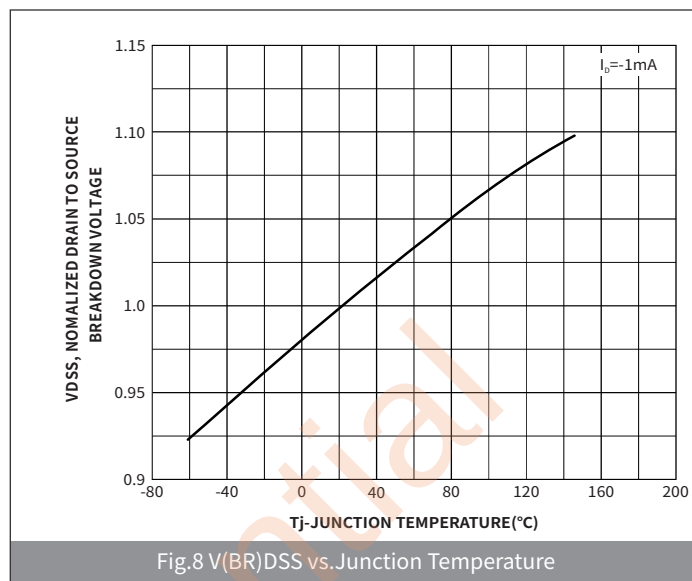
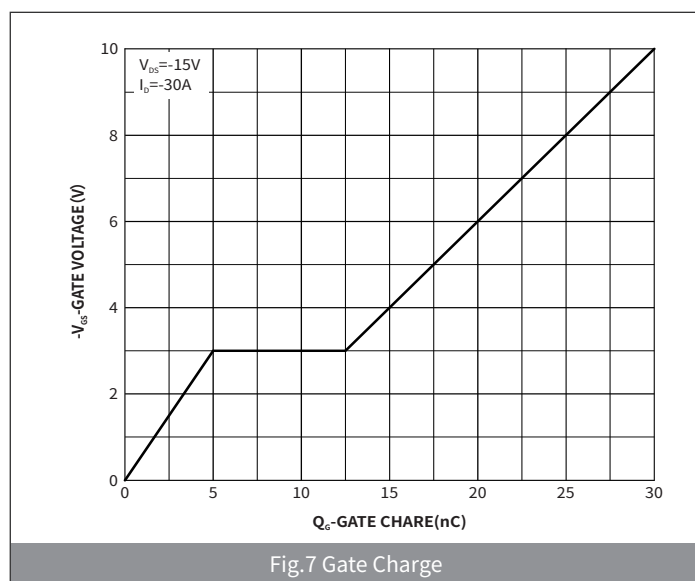
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	$I_S=-50A, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-50

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=-25V,VG=-10V,L=0.1mH,IAS=-30A,Rg=25Ω.
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

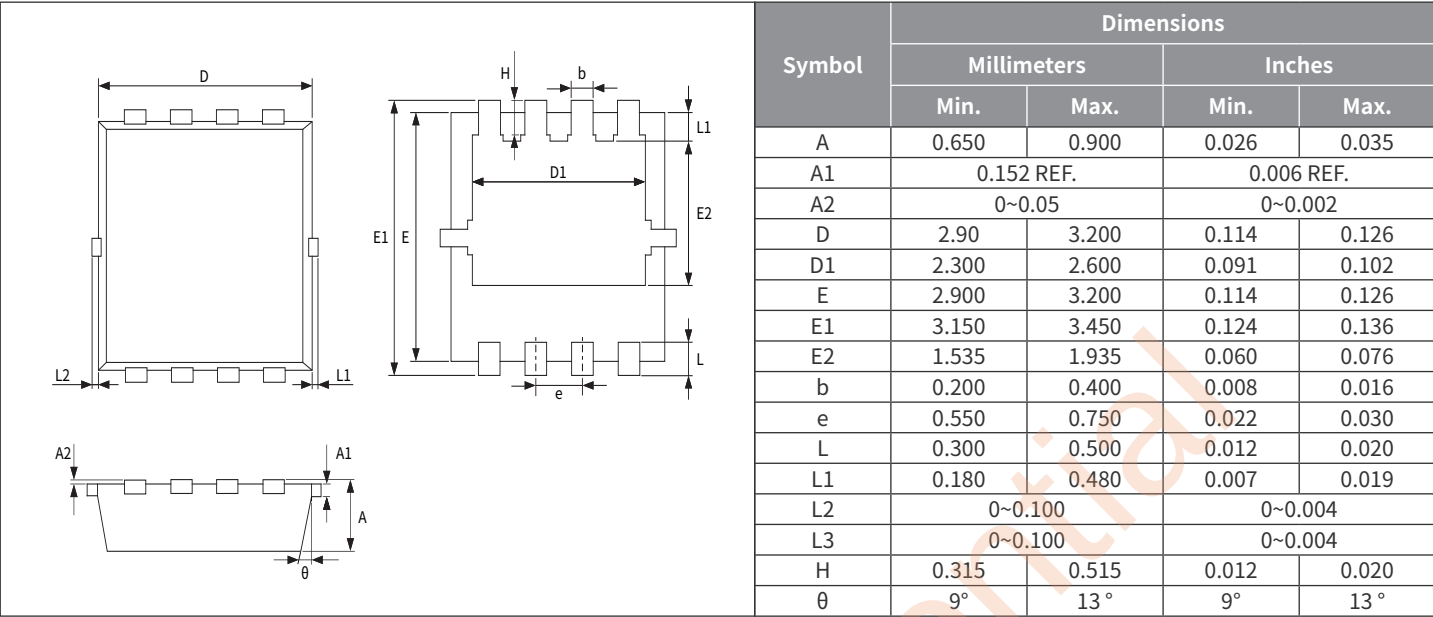
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



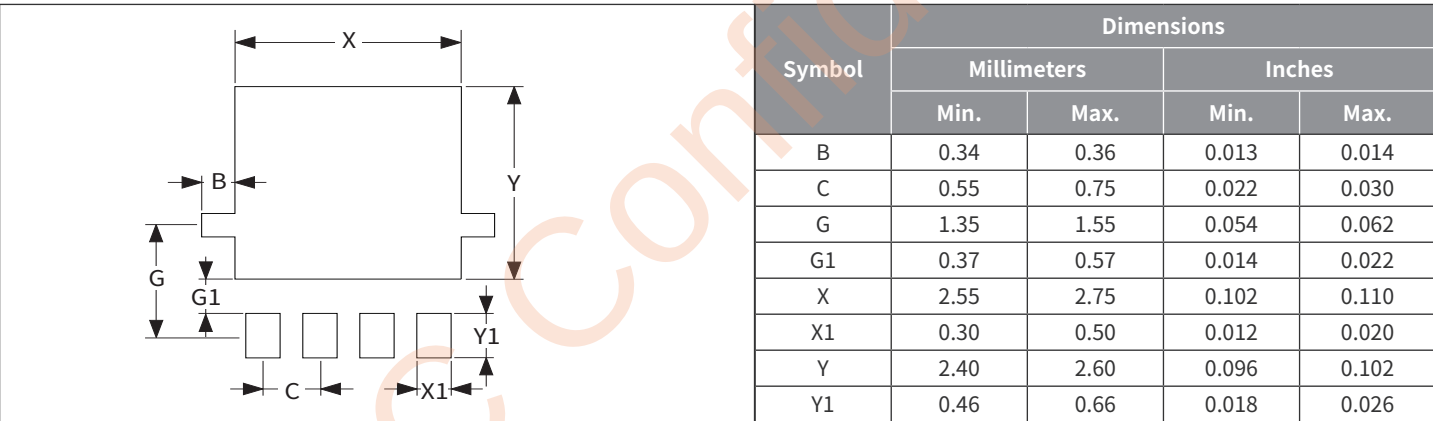
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● Package Outline Dimensions (PDFN3030)



● Suggested Pad Layout



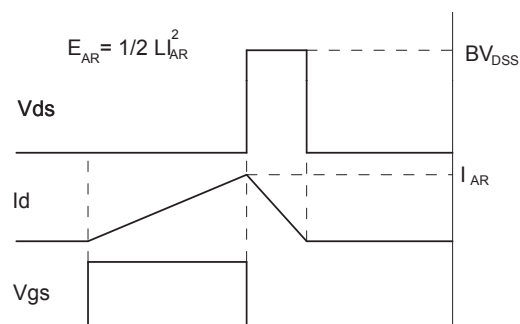
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

