

General Description

The MY70N10P use advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

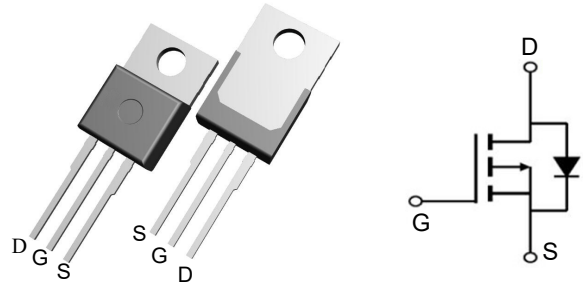


Features

V_{DSS}	100	V
I_D	70	A
$P_D(T_C=25^{\circ}C)$	190	W
$R_{DS(ON)}(at V_{GS}=10V)$	<14	$m\Omega$

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY70N10P	TO-220	MY70N10P	1000

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	100	V
I_D	Drain Current	$T_J=25^{\circ}C$	A
		$T_J=100^{\circ}C$	
$V_{GS(TH)}$	Gate Threshold Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy (note1)	370	mJ
I_{AR}	Avalanche Current (note2)	50	A
P_D	Power Dissipation ($T_J=25^{\circ}C$)	190	W
T_J	Junction Temperature(Max)	150	$^{\circ}C$
T_{stg}	Storage Temperature	-55~+150	$^{\circ}C$
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	-	0.77	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	-	62.5	$^{\circ}C/W$

Electrical Characteristics ($T_A=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250pA, V _{GS} =0	100	-	-	V
△BV _{DSS} /△T _J	Breakdown Voltage Temperature Coefficient	I _D =250μA ,Reference to 25℃	-	0.25	-	V/℃
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V	-	-	10	μA
		V _{DS} =48V, T _j =125C			100	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	
On Characteristics						
V _{GS(TH)}	Date Threshold Voltage	I _D =250pA,V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain- Source On- Resistance	I _D =35A,V _{GS} =10V	-	-	0.014	Q
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0 , f=1.0MHz	-	350	-	pF
C _{oss}	Output Capacitance		-	260	-	
C _{rss}	Reverse Transfer Capacitance		-	150	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =30V, I _D =35A R _G =4.7Q (Note 3,4)	-	18	-	ns
T _r	Turn-On Rise Time		-	87	-	
T _{d(off)}	Turn-Off Delay Time		-	29	-	
T _f	Turn-Off Rise Time		-	17.5	-	
Q _g	Total Gate Charge	V _{DS} =30,V _{GS} =10V, I _D =35A (Note 3,4)	-	56		nC
Q _{gs}	Gate-Source Charge		-	18	-	
Q _{gd}	Gate-Drain Charge		-	22	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Max. Diode Forward Current	-	-	-	70	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	280	
V _{SD}	Diode Forward Voltage	I _D =44A	-		1.2	V
T _{rr}	Reverse Recovery Time	I _S =44A,V _{GS} =0V diF/dt=100A/ps	-	35	53	ps
Q _{rr}	Reverse Recovery Charge	(Note3)	-	143	215	p C

Notes : 1, $L=0.5\text{mH}$, $I_{AS}=70\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$
2, Repetitive Rating : Pulse width limited by maximum junction temperature
3, Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
4, Essentially Independent of Operating Temperature

Typical Characteristics

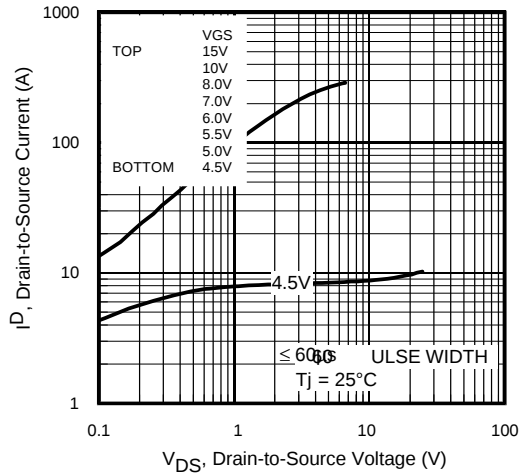


Fig 1. Typical Output Characteristics

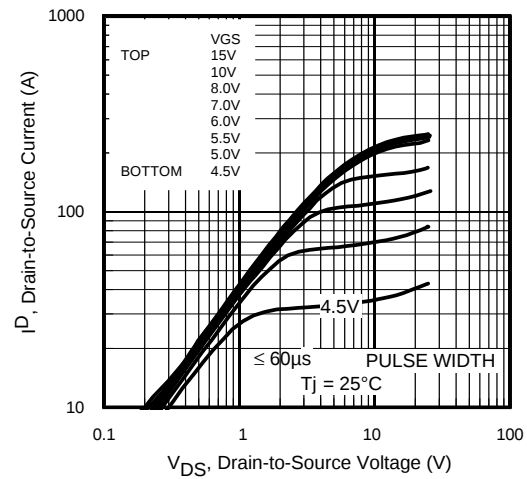


Fig 2. Typical Output Characteristics

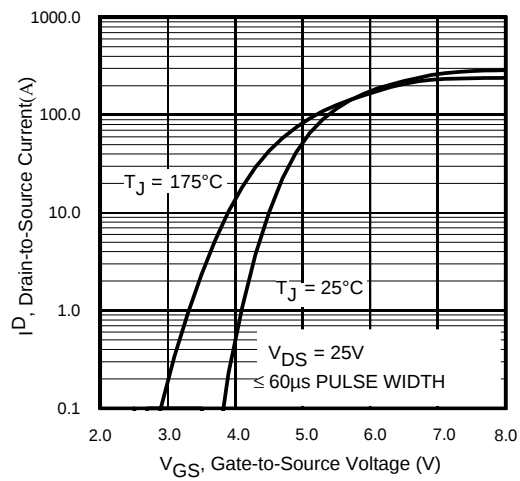


Fig 3. Typical Transfer Characteristics

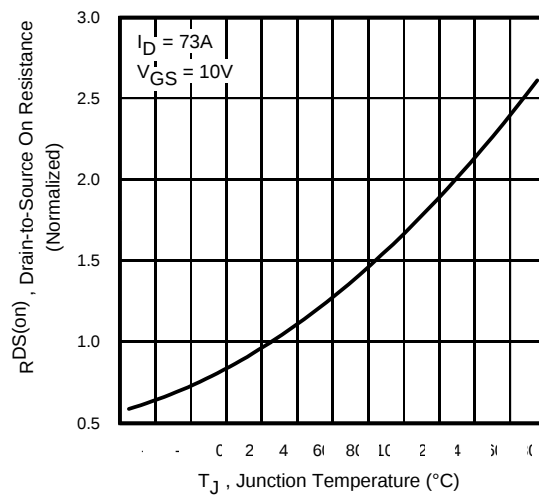


Fig 4. Normalized On-Resistance vs. Temperature

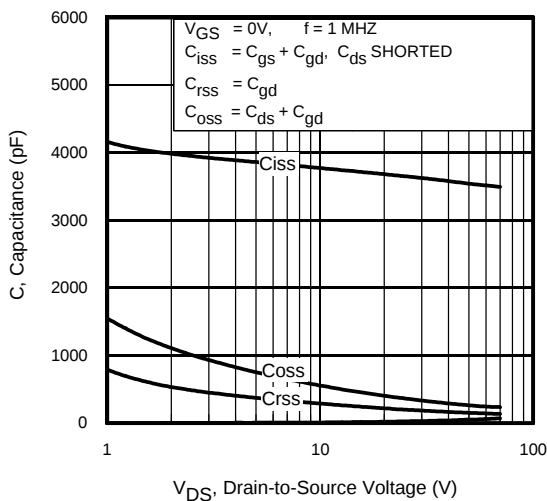


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

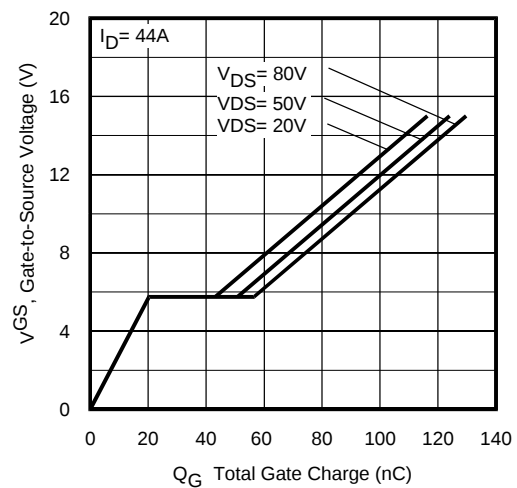


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

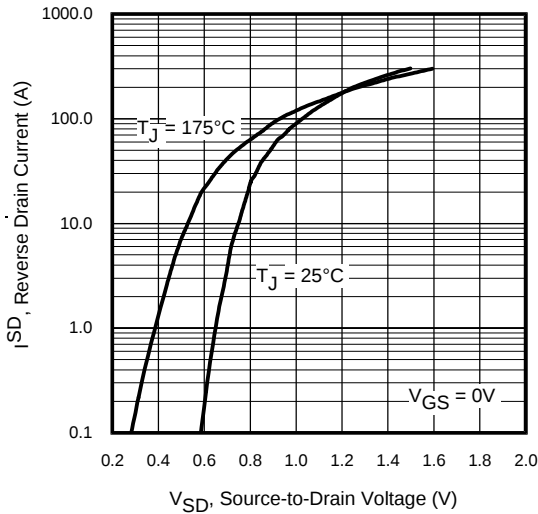


Fig 7. Typical Source-Drain Diode Forward Voltage

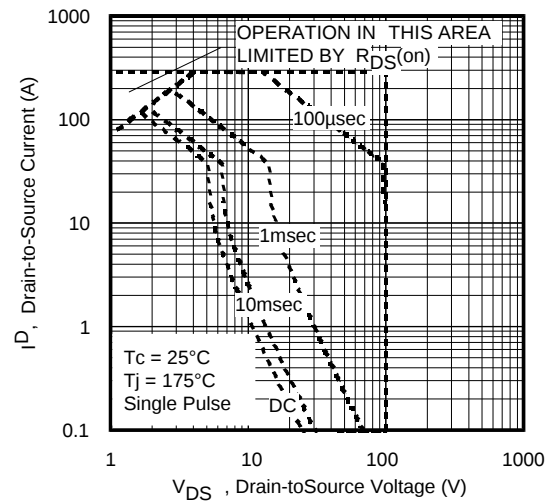


Fig 8. Maximum Safe Operating Area

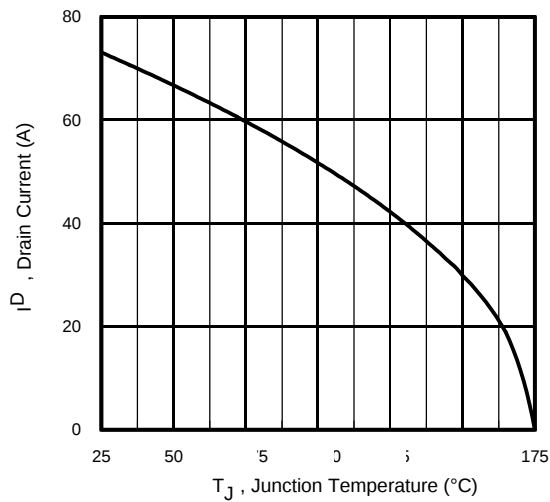


Fig 9. Maximum Drain Current vs. Case Temperature

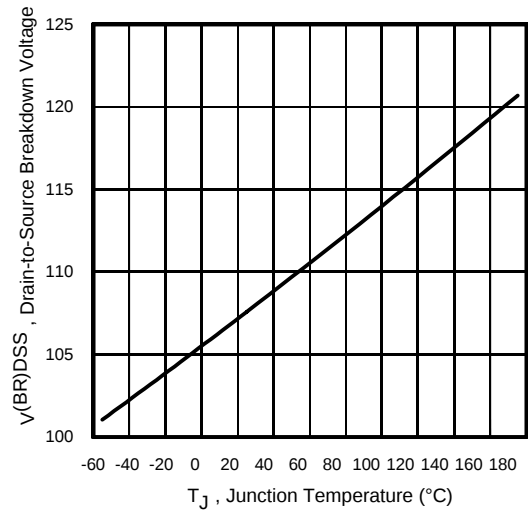


Fig 10. Drain-to-Source Breakdown Voltage

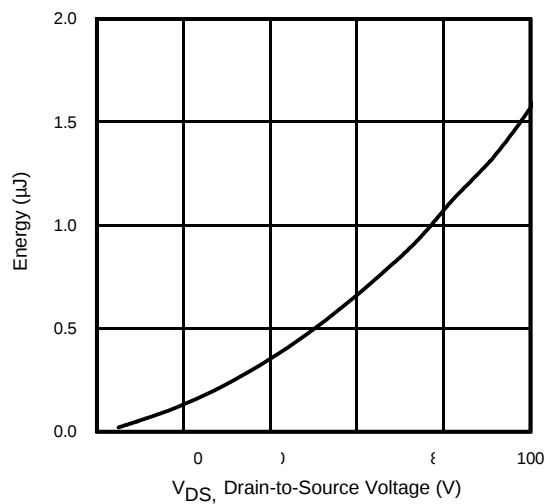


Fig 11. Typical C_{OSS} Stored Energy

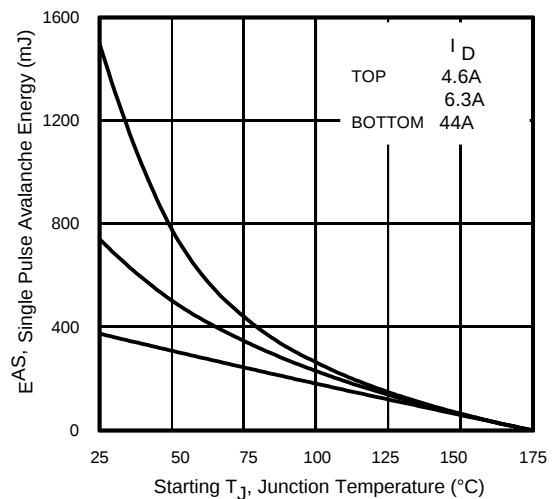
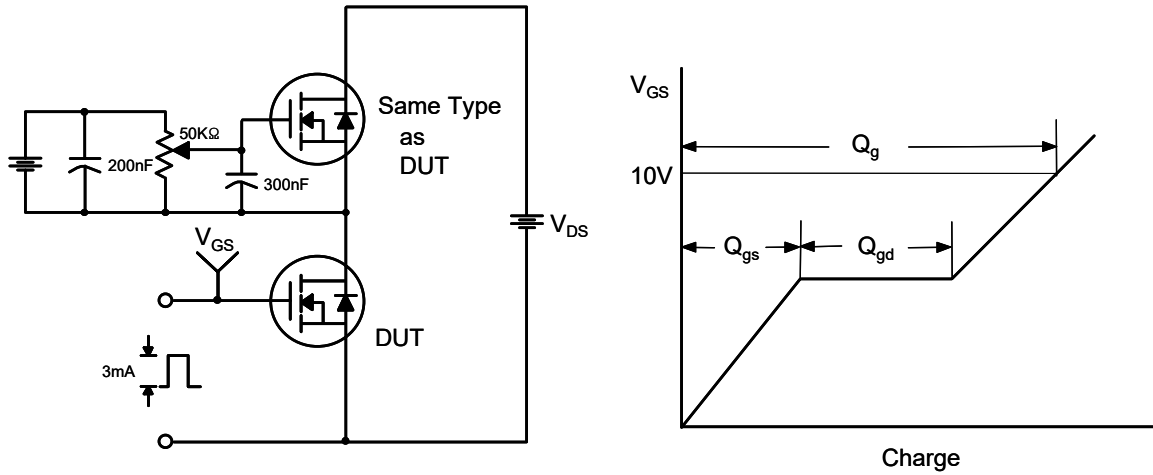
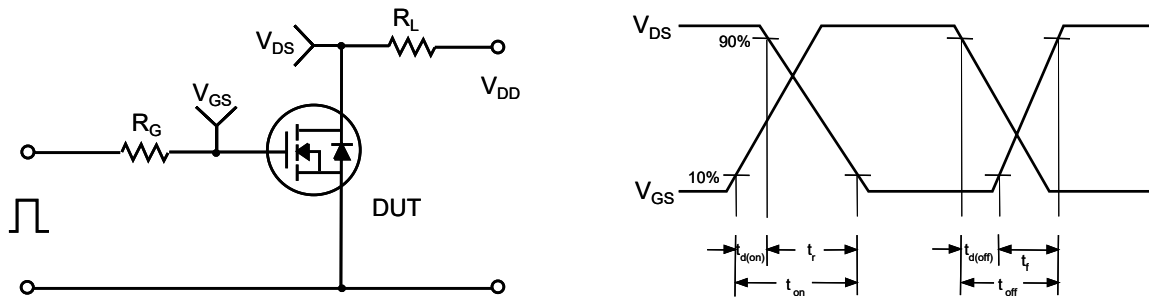


Fig 12. Maximum Avalanche Energy Vs. Drain Current

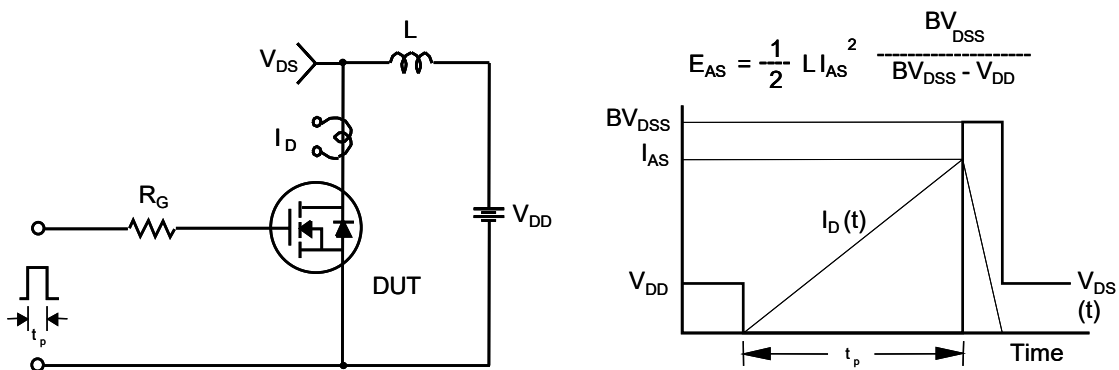
Gate Charge Test Circuit & Waveform



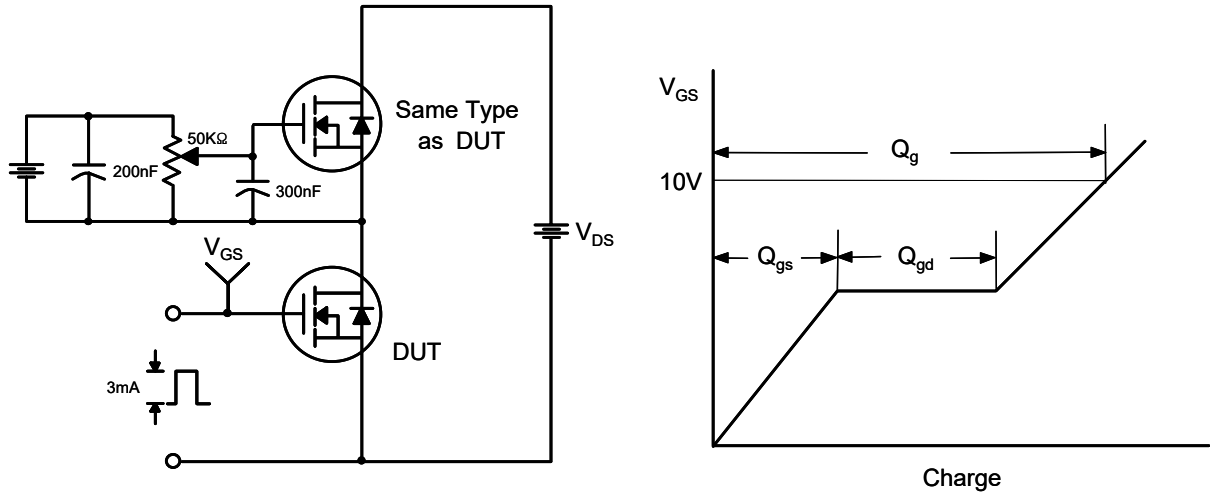
Resistive Switching Test Circuit & Waveforms



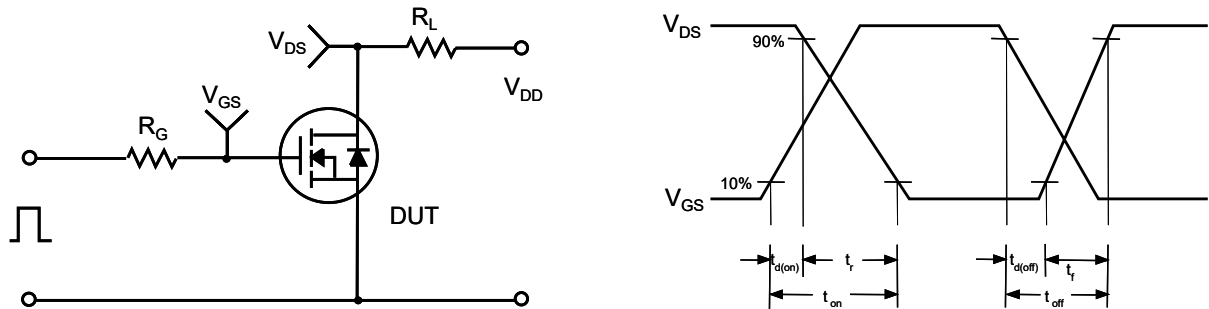
Unclamped Inductive Switching Test Circuit & Waveforms



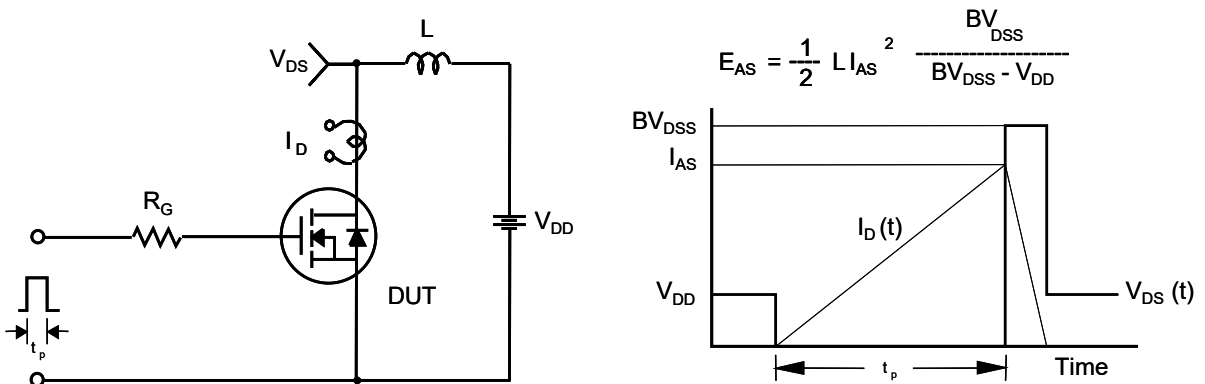
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-TO-220-JQ Single

Unit: mm

