

General Description

The MY2N65D can be used in various power switching circuit for system miniaturization and higher efficiency.

The package form is TO-252-2L, which accords with the RoHS standard.

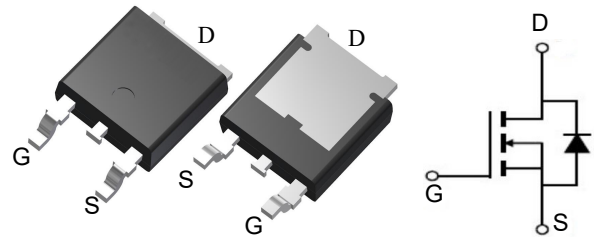


Features

V_{DSS}	650	V
I_D	2	A
$P_D(T_C=25^{\circ}C)$	35	W
$R_{DS(ON)}(at V_{GS}=4.5V)$	4.2	Ω

Application

- Power switch circuit
- Adaptor and charger



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY2N65D	TO-252-2L	MY2N65D	2500

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	650	V
VGS	Gate-Source Voltage	+30	V
$I_{D@T_C=25^{\circ}C}$	Drain Current, V_{GS} @ 4.5V	2	A
$I_{D@T_C=100^{\circ}C}$	Drain Current, V_{GS} @ 4.5V	1.3	A
IDM	Pulsed Drain Current ¹	8	A
$P_{D@T_C=25^{\circ}C}$	Total Power Dissipation	35	W
EAS	Single Pulse Avalanche Energy ⁴	50	mJ
TSTG	Storage Temperature Range	-45 to 125	$^{\circ}C$
TJ	Operating Junction Temperature Range	-45 to 125	$^{\circ}C$

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

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Unit
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A, \text{Reference } 25^{\circ}\text{C}$	--	0.7	--	$V/^{\circ}\text{C}$
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=650V, V_{GS}=0V, T_a=25^{\circ}\text{C}$	--	--	1	μA
		$V_{DS}=520V, V_{GS}=0V, T_a=125^{\circ}\text{C}$	--	--	100	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+30V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-30V$	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=1A$	--	4.2	5	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	--	4.0	V
Pulse width $t_p \leq 300\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=15V, I_D=1A$	--	1.8	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, f=1.0\text{MHz}$	--	335	--	pF
C_{oss}	Output Capacitance		--	33	--	
C_{rss}	Reverse Transfer Capacitance		--	3	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D=2A, V_{DD}=325V, R_G=10\Omega$	--	11	--	ns
t_r	Rise Time		--	13	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	29	--	
t_f	Fall Time		--	12	--	
Q_g	Total Gate Charge	$I_D=2A, V_{DD}=520V, V_{GS}=10V$	--	9.5	--	nC
Q_{gs}	Gate to Source Charge		--	1.5	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	4.9	--	

Typical Characteristics

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I _S	Continuous Source Current (Body Diode)		--	--	2	A
I _{SM}	Maximum Pulsed Current (Body Diode)		--	--	8	A
V _{SD}	Diode Forward Voltage	I _S =2.0A, V _{GS} =0V	--	--	1.5	V
trr	Reverse Recovery Time	I _S =2.0A, T _J = 25℃ dI _F /dt=100A/us, V _{GS} =0V	--	187	--	ns
Qrr	Reverse Recovery Charge		--	610	--	nC
I _{RRM}	Reverse Recovery Current		--	6.6	--	A
Pulse width tp≤300μs, δ ≤2%						

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Junction-to-Case	3.57	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	100	$^\circ C/W$

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

^{a2}: $L=10mH, I_D=3.1A$, Start $T_J=25^\circ C$

^{a3}: $I_{SD}=2A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}$, Start $T_J=25^\circ C$

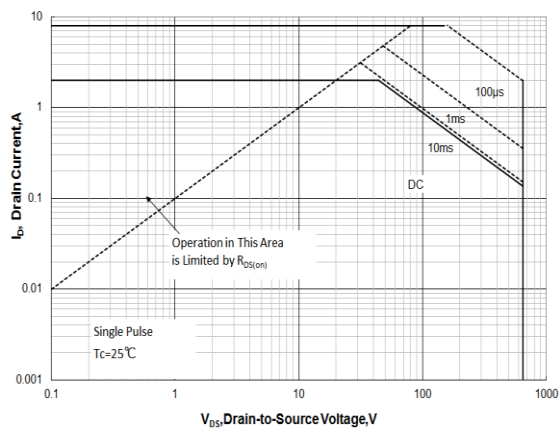


Figure 1 Maximum Forward Bias Safe Operating Area

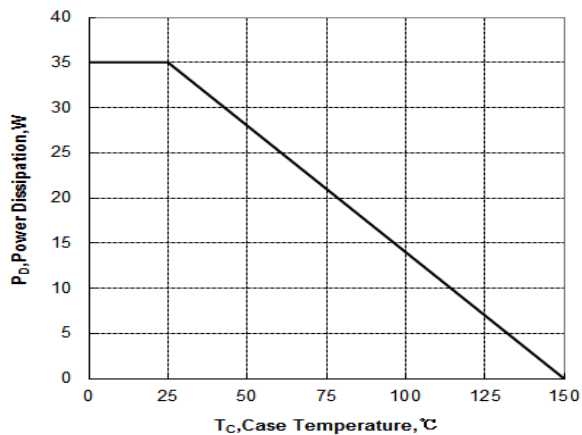


Figure 2 Maximum Power dissipation vs Case Temperature

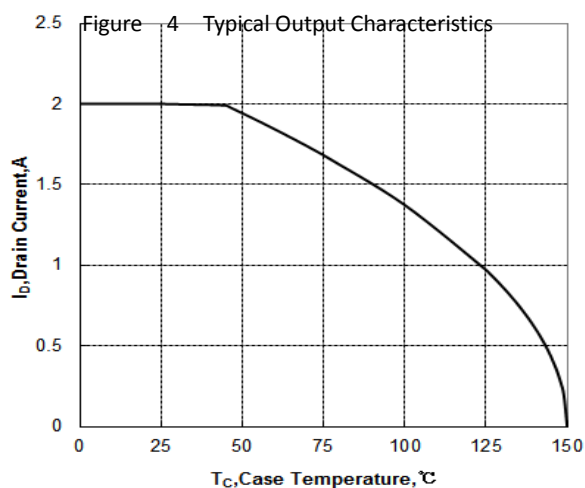


Figure 3 Maximum Continuous Drain Current vs Case Temperature

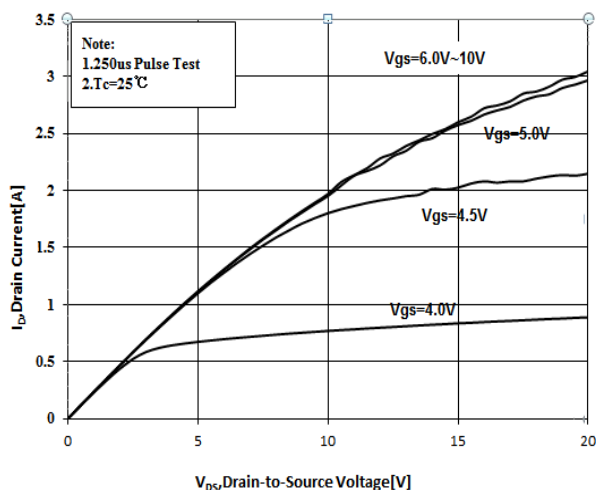


Figure 4 Typical Output Characteristics

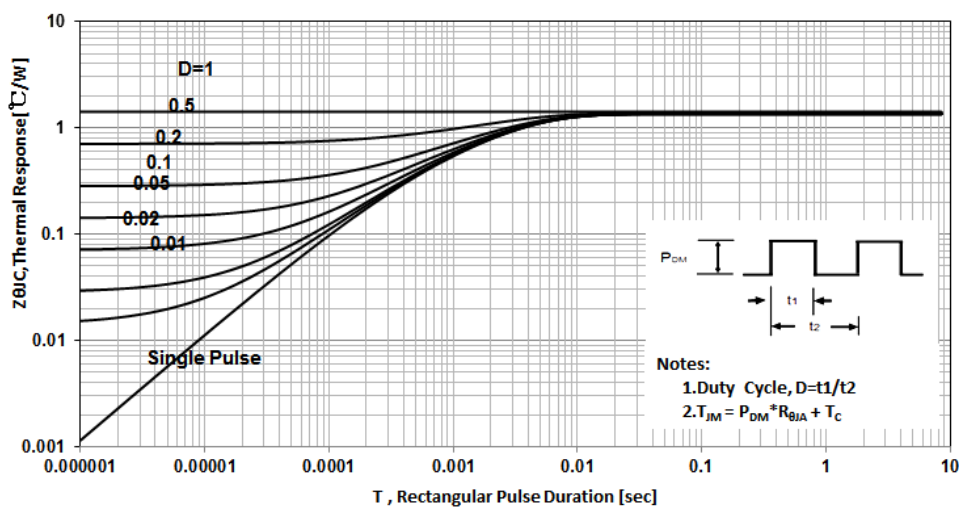


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

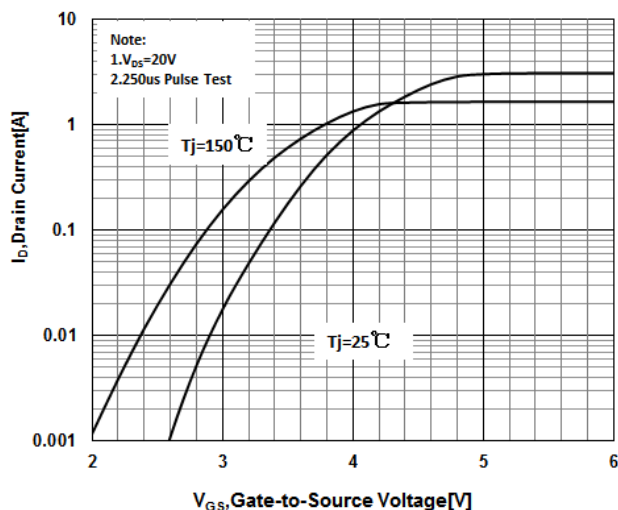


Figure 6 Typical Transfer Characteristics

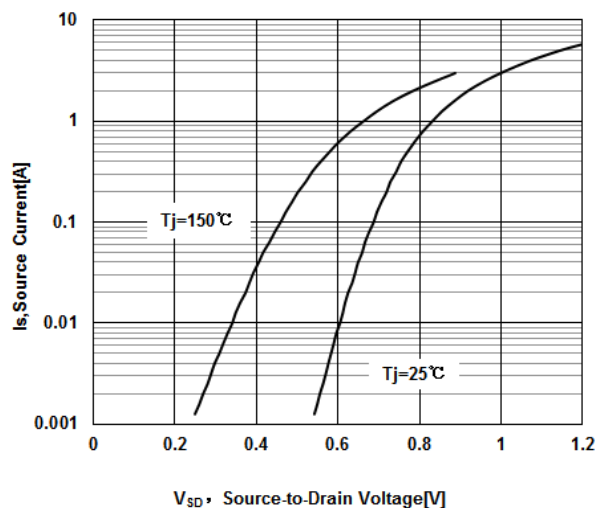


Figure 7 Typical Body Diode Transfer Characteristics

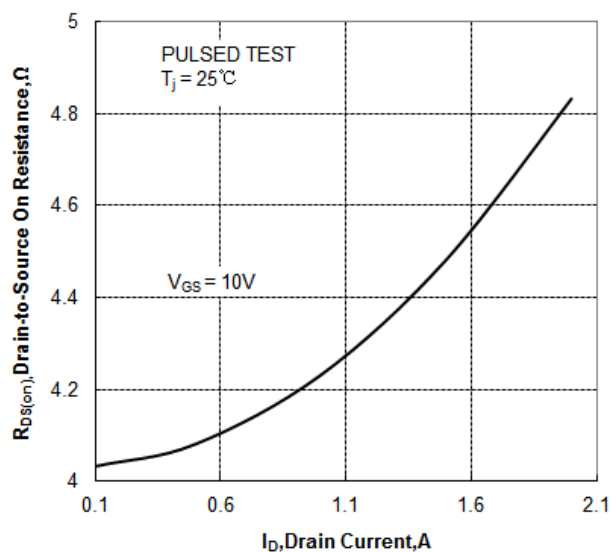


Figure 8 Typical Drain to Source ON Resistance vs Drain Current

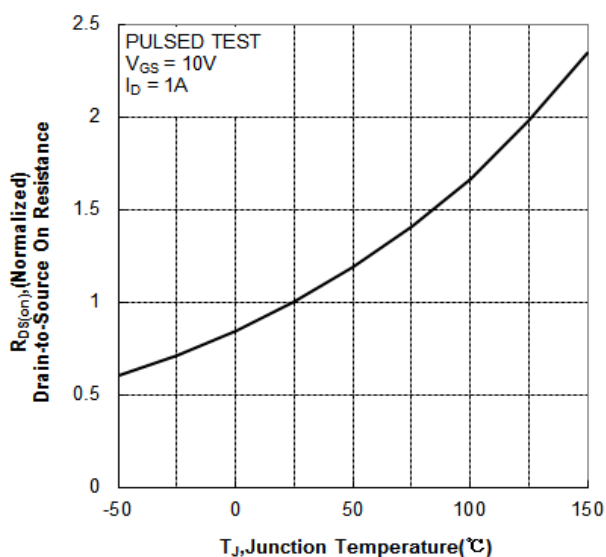


Figure 9 Typical Drian to Source on Resistance vs Junction Temperature

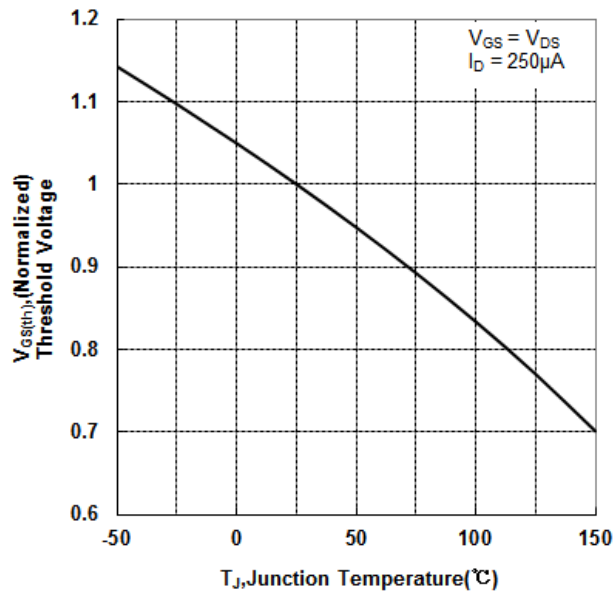


Figure 10 Typical Theshold Voltage vs Junction Temperature

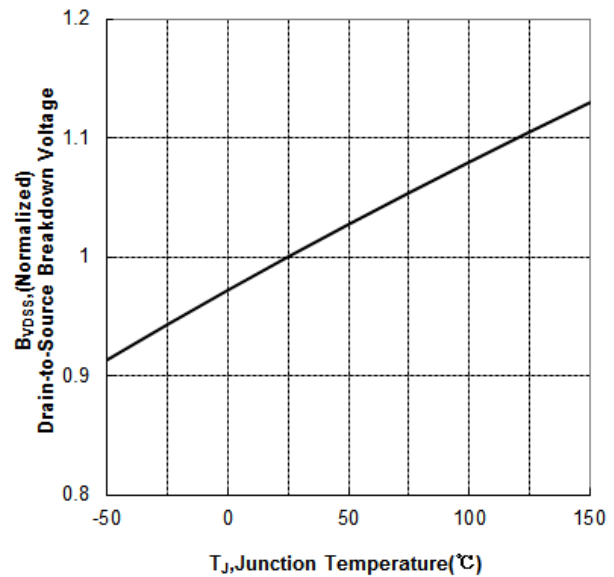


Figure 11 Typical Breakdown Voltage vs Junction Temperature

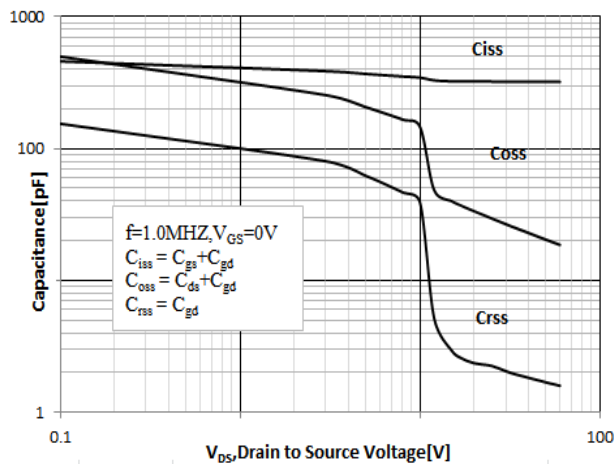


Figure 12 Typical Capacitance vs Drain to Source Voltage

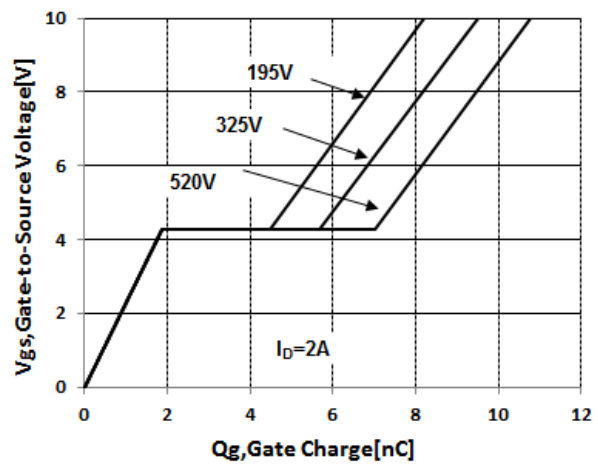


Figure 13 Typical Gate Charge vs Gate to Source Voltage

Test Circuit and Waveform

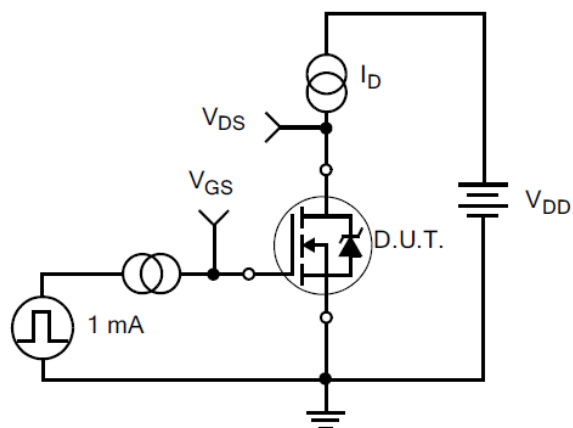


Figure 14. Gate Charge Test Circuit

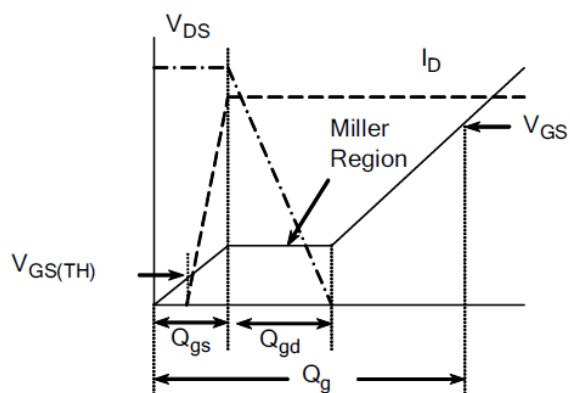


Figure 15. Gate Charge Waveforms

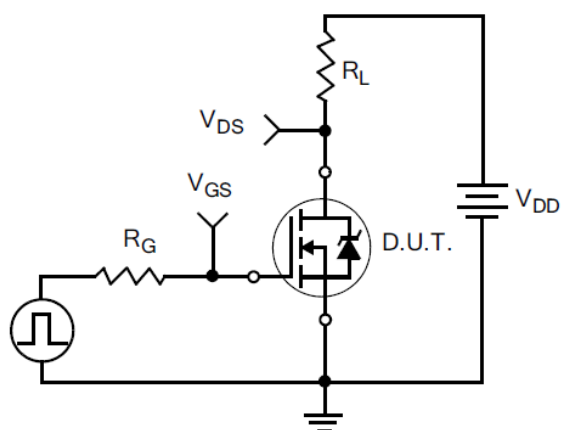


Figure 16. Resistive Switching Test Circuit

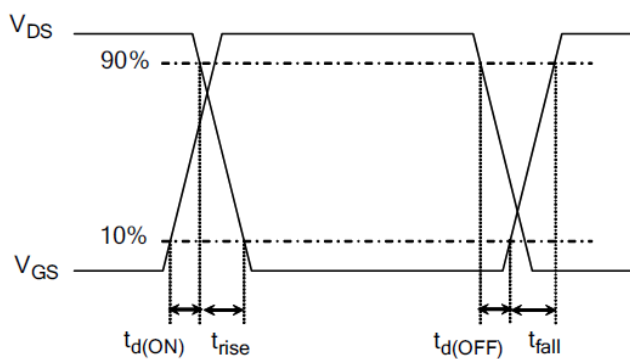


Figure 17. Resistive Switching Waveforms

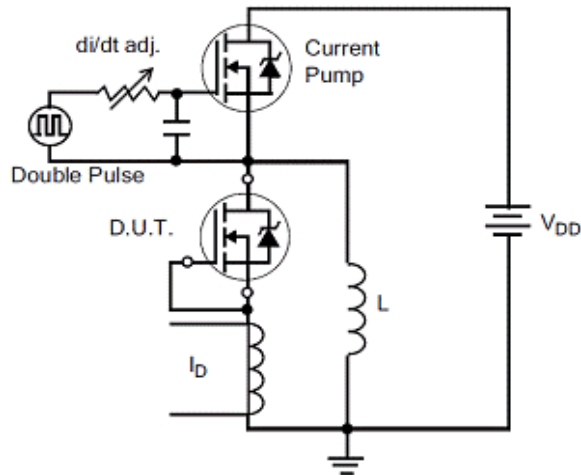


Figure 18. Diode Reverse Recovery Test Circuit

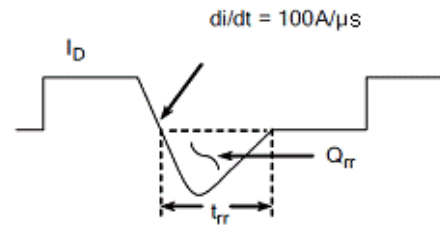


Figure 19. Diode Reverse Recovery Waveform

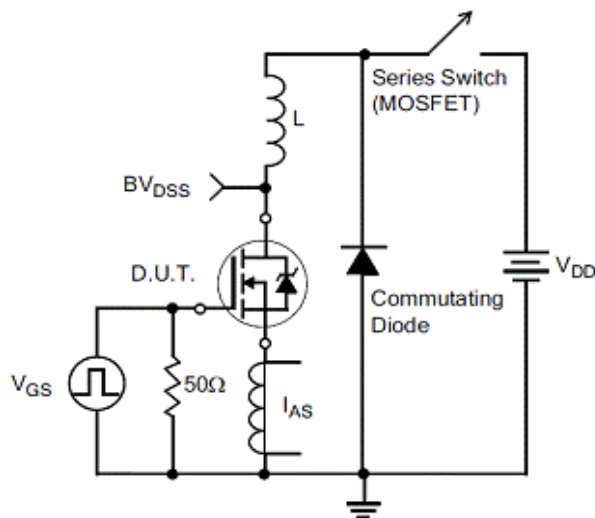


Figure20.Unclamped Inductive Switching Test Circuit

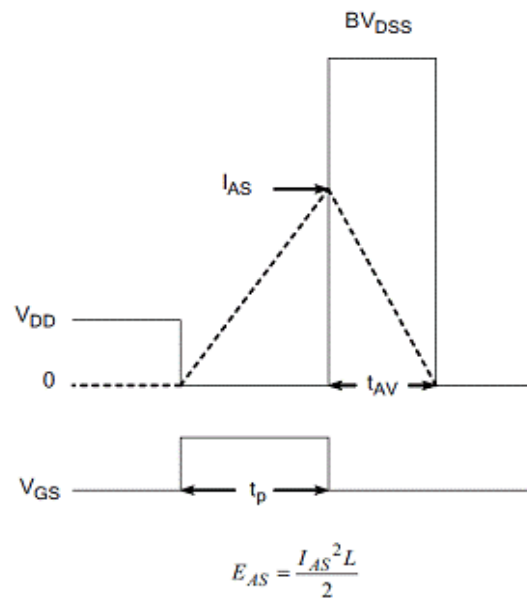
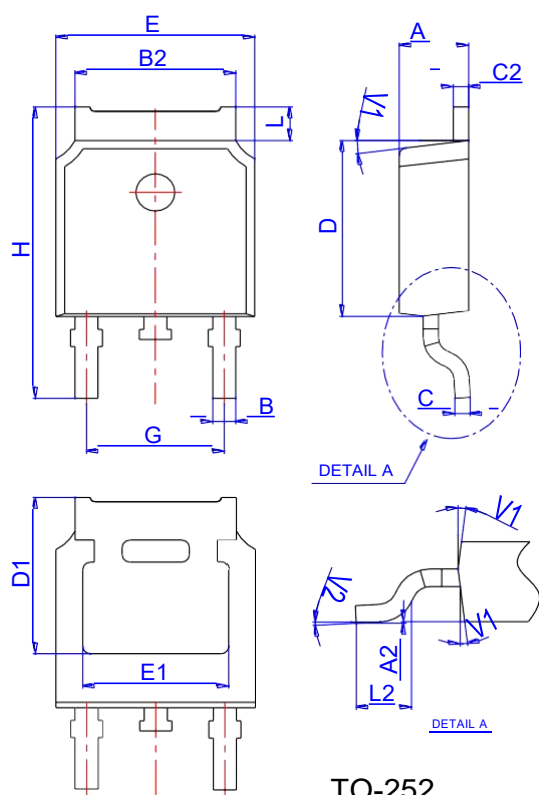


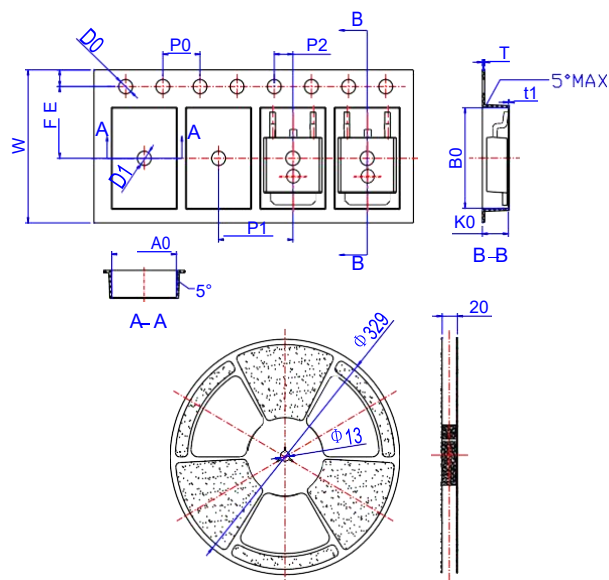
Figure21.Unclamped Inductive Switching Waveform

Package Mechanical Data-TO-252-JQ Single



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583