General Description

The MY2N65D can be used in various power swithching circuit for system miniaturization and higher efficiency. The package form is TO-252-2L, which accords with the RoHS standard.

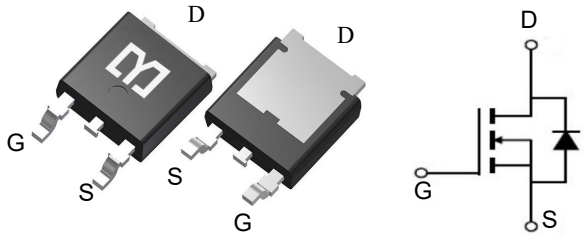
RoHS Compliant

Features

V_{DSS}	650	V
I_D	2	A
$P_D(T_C=25℃)$	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℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	650	V
VGS	Gate-Source Voltage	+30	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 4.5V	2	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 4.5V	1.3	A
IDM	Pulsed Drain Current[1]	8	A
P_D@T_C=25℃	Total Power Dissipation	35	W
E_{AS}	Single Pulse Avalanche Energy[4]	50	mJ
TSTG	Storage Temperature Range	-45 to 125	℃
T_J	Operating Junction Temperature Range	-45 to 125	℃

Electrical Characteristics (T_C=25 ℃, unless otherwise noted)

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Unit
			Min.	Typ.	Max.	s
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	650	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	ID=250uA,Reference25℃	--	0.7	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS} =650V, V_{GS}= 0V, T_a = 25℃	--	--	1	μA
		V_{DS} =520V, V_{GS}= 0V, T_a = 125℃	--	--	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 = 250μA	2.0	--	4.0	V
Pulse width tp≤300μs, δ ≤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 = 1.0MHz	--	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 =10Ω	--	11	--	ns
tr	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	℃/W
$R_{\theta JA}$	Junction-to-Ambient	100	℃/W

[a1]: Repetitive rating; pulse width limited by maximum junction temperature
[a2]: L=10mH, I_D=3.1A, Start T_J=25℃
[a3]: I_{SD} =2A,di/dt ≤100A/us,V_{DD}≤$BV_{DS,}$ Start T_J=25℃

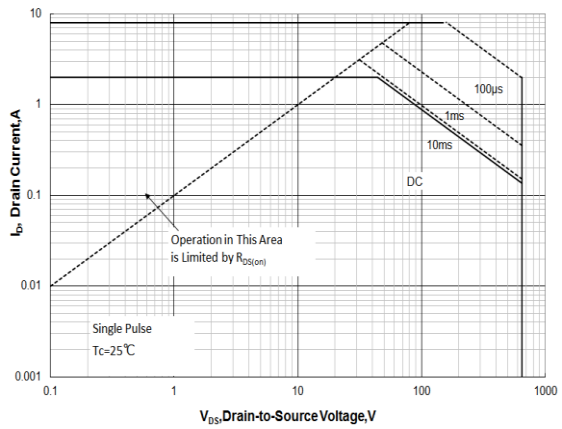


Figure 1 Maximum Forward Bias Safe Operating Area

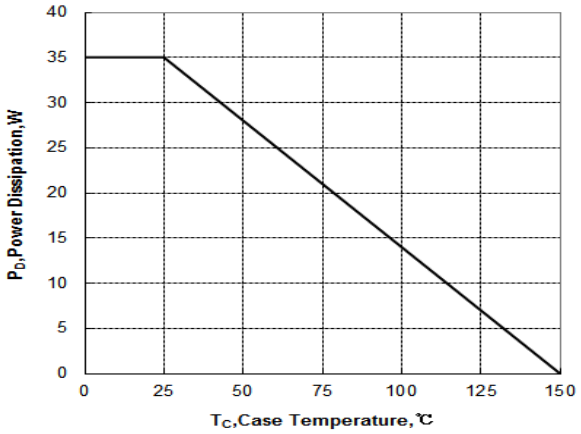


Figure 2 Maximum Power dissipation vs Case Temperature

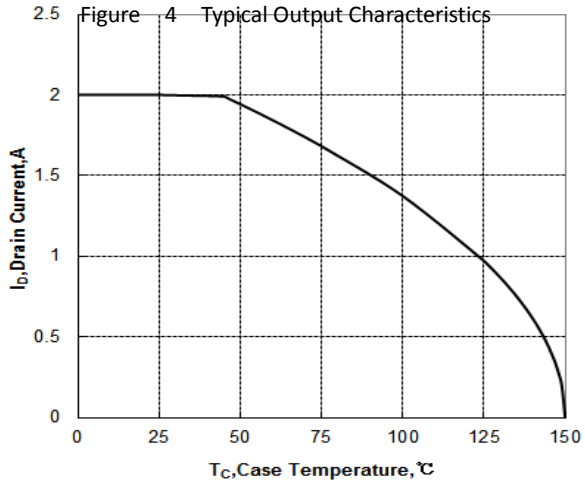
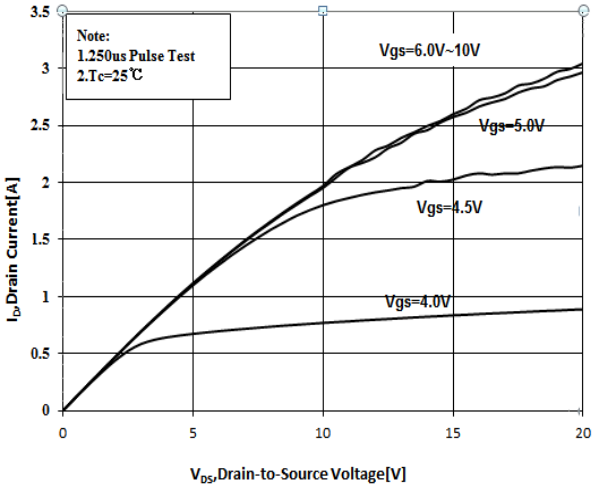


Figure 3 Maximum Continuous Drain Current vs Case Temperature

Figure 4 Typical Output Characteristics



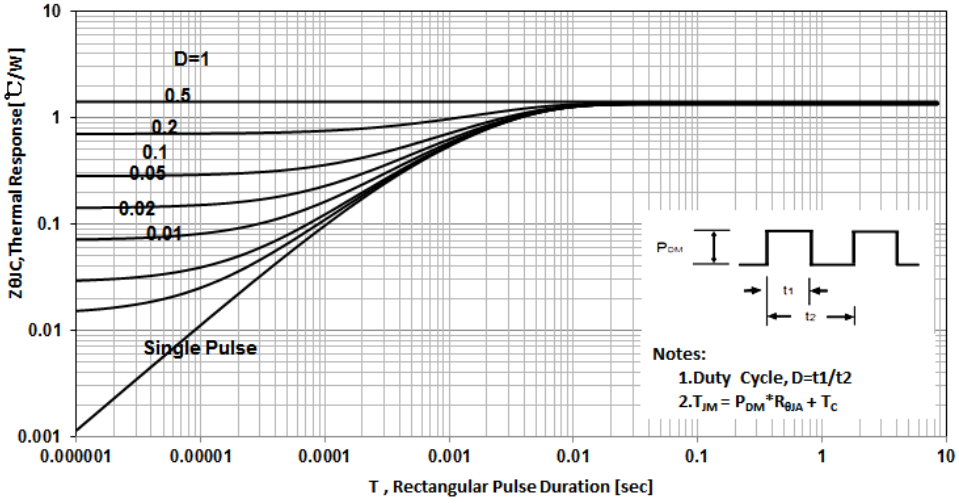


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

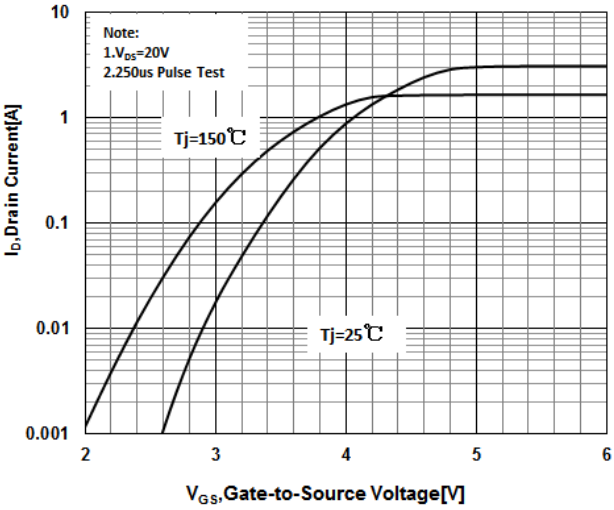


Figure 6 Typical Transfer Characteristics

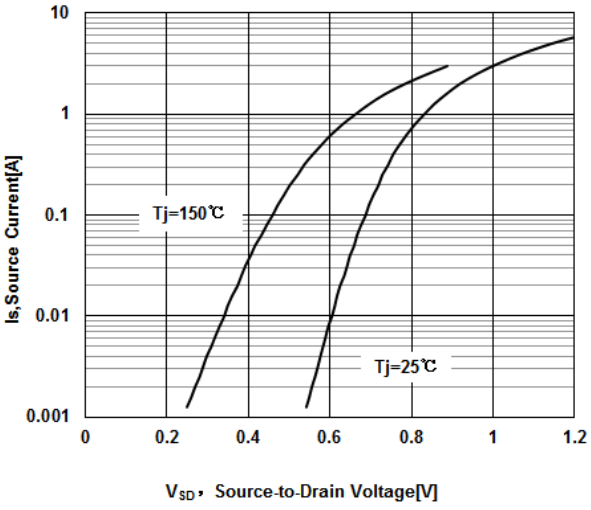


Figure 7 Typical Body Diode Transfer Characteristics

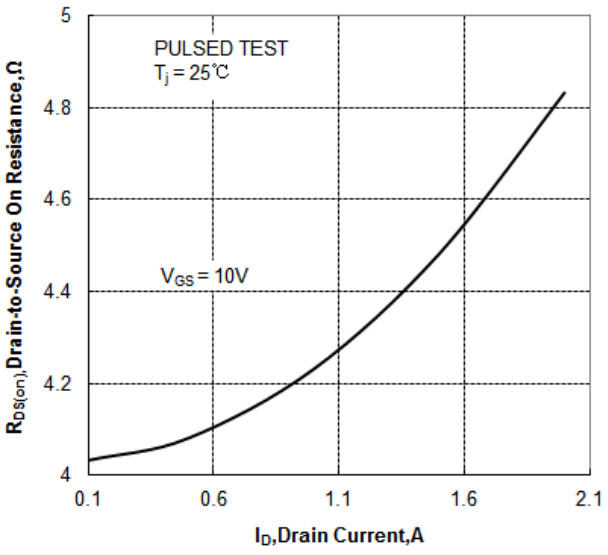


Figure 8 Typical Drain to Source ON Resistance vs Drain Current

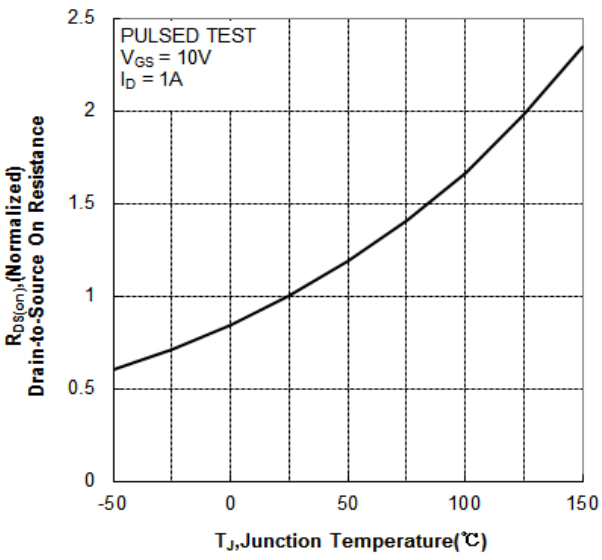


Figure 9 Typical Drian to Source on Resistance vs Junction Temperature

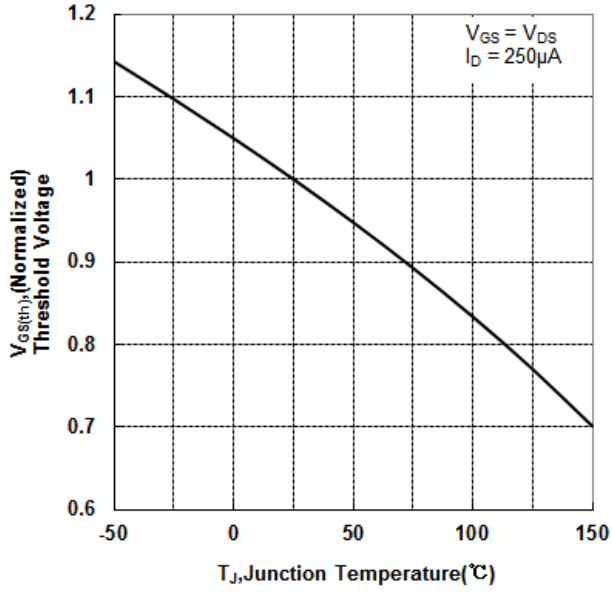


Figure 10 Typical Theshold Voltage vs Junction Temperature

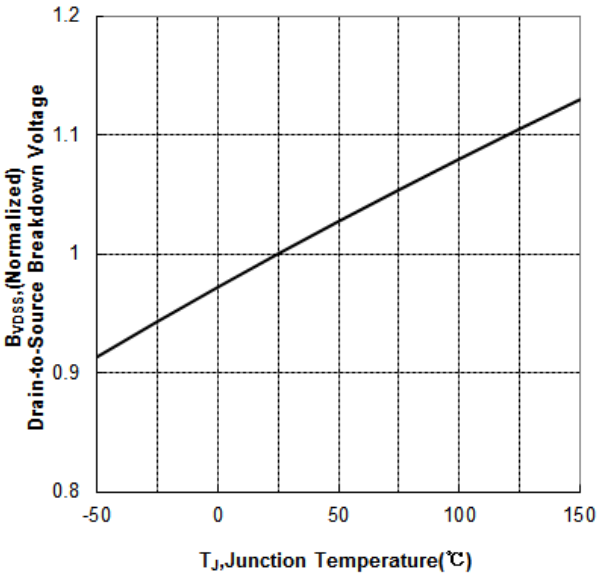


Figure 11 Typical Breakdown Voltage vs Junction Temperature

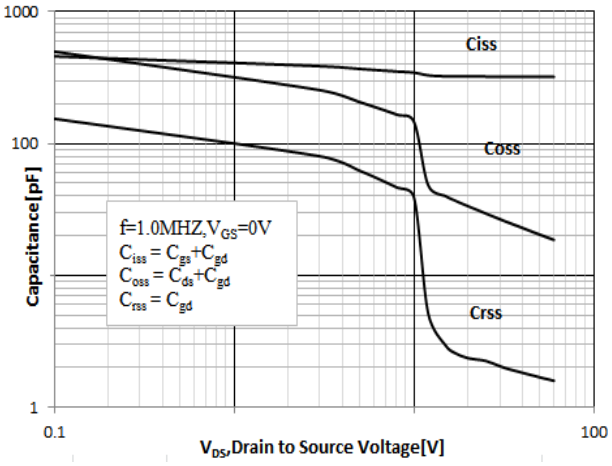


Figure 12 Typical Capacitance vs Drain to Source Voltage

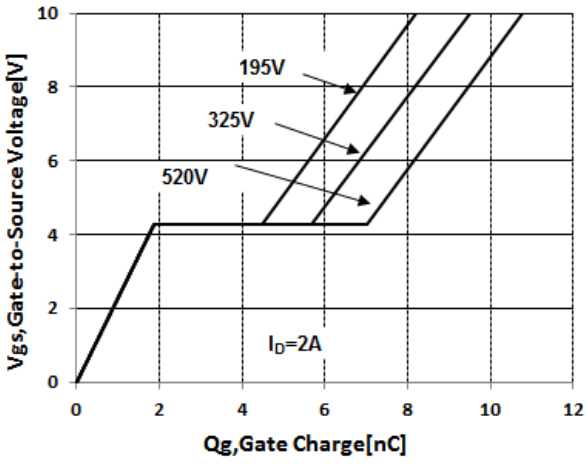


Figure 13 Typical Gate Charge vs Gate to Source Voltage

Test Circuit and Waveform

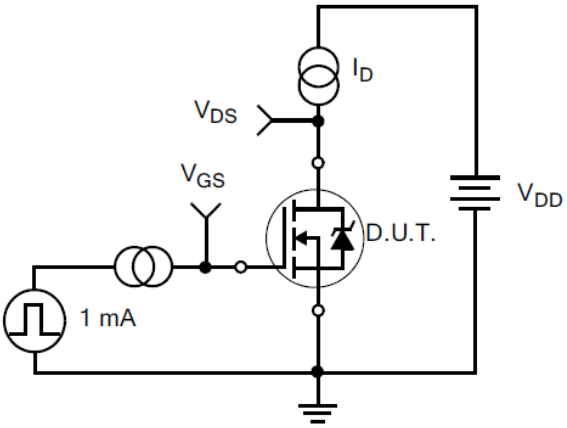


Figure 14. Gate Charge Test Circuit

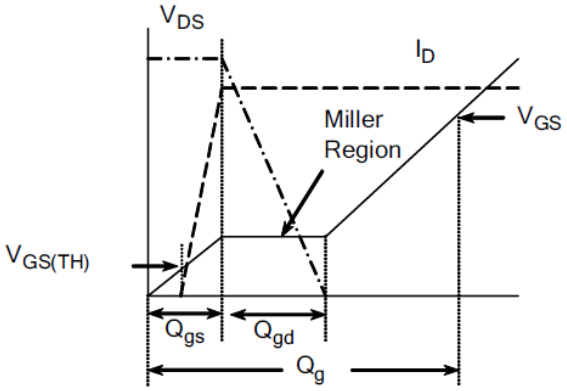


Figure 15. Gate Charge Waveforms

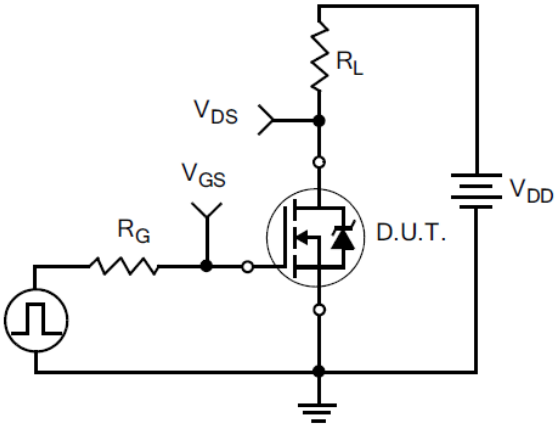


Figure 16. Resistive Switching Test Circuit

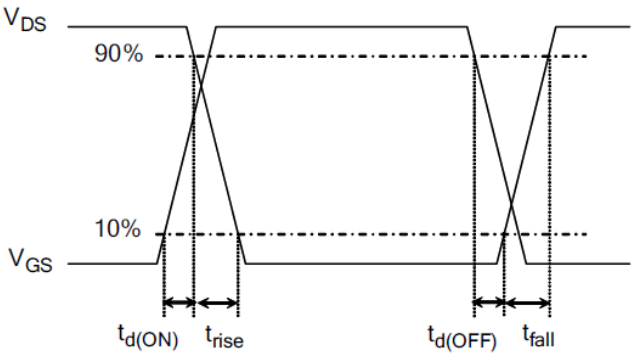


Figure 17. Resistive Switching Waveforms

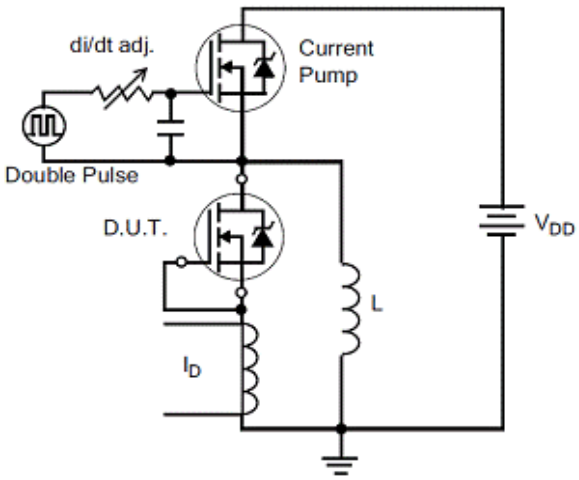


Figure 18. Diode Reverse Recovery Test Circuit

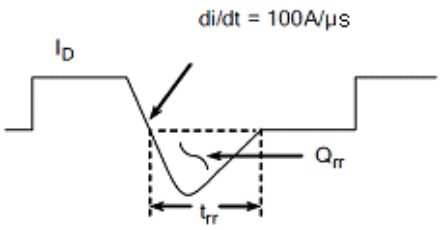


Figure 19. Diode Reverse Recovery Waveform

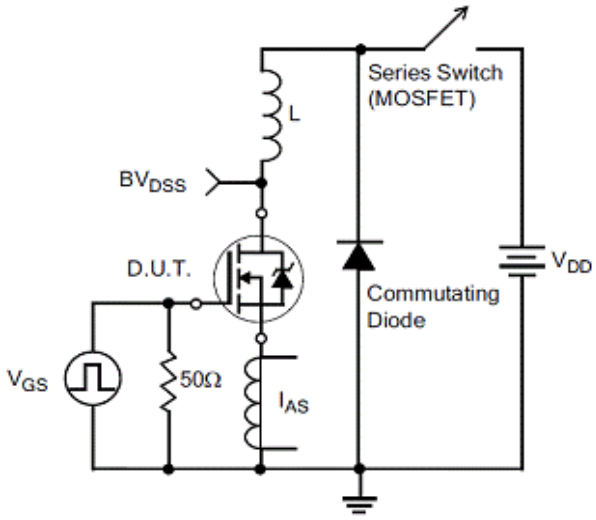


Figure20.Unclamped Inductive Switching Test Circuit

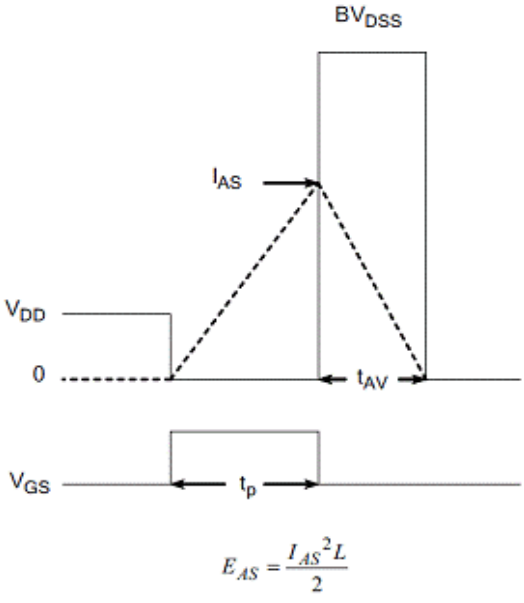
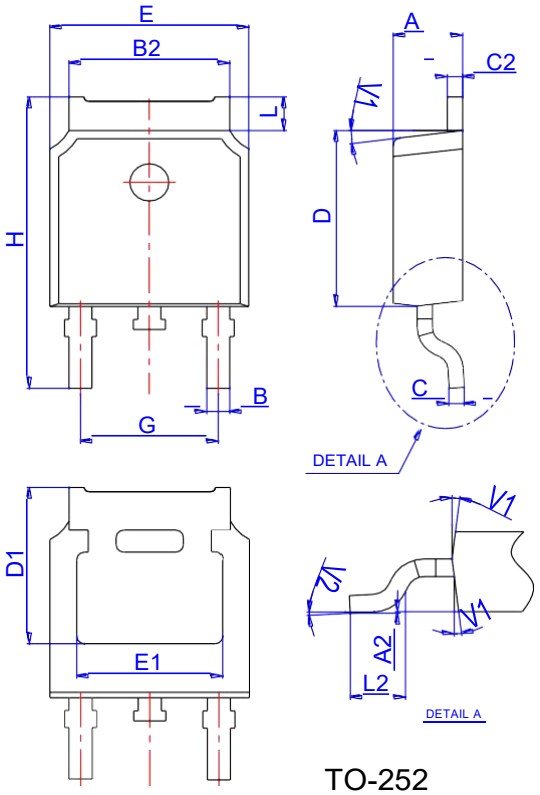


Figure21.Unclamped Inductive Switching Waveform

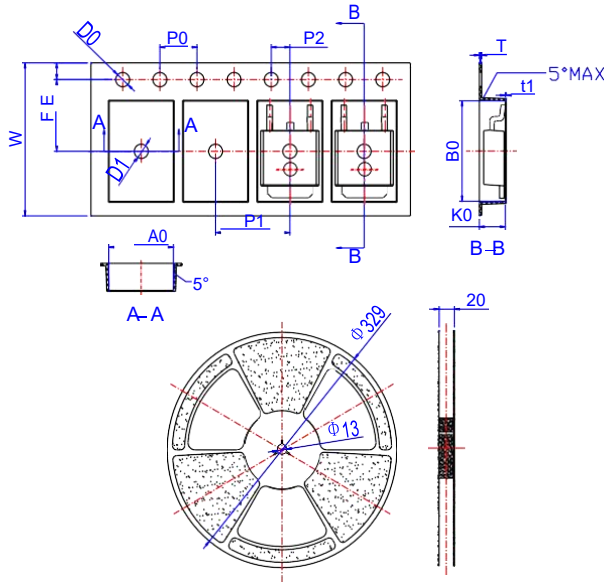
Package Mechanical Data-TO-252-JQ Single



TO-252

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