MY5N65D

650V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY5N65D is silicon N-channel Enhanced VDMOSFETS, obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy.

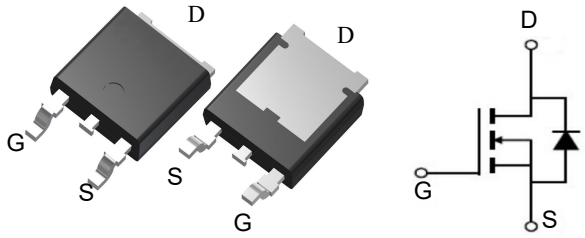
RoHS Compliant

Features

V_{DSS}	650	V
I_D	5	A
P_D(T_C= 2 5 ℃)	36	W
$R_{DS(ON)}$(atV_{GS} = 10V)	2	Ω

Application

- High efficiency switch mode power supplies
- Power factor correction
- Electronic lamp ballast



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY5N65D	TO-252	MY5N65D	2500

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameters	Ratings	Unit
V_{DSS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage-Continuous	±30	V
I_D	Drain Current-Continuous（Note 2）	5	A
I_{DM}	Drain Current-Single Plused（Note 1）	18	A
P_D	Power Dissipation （Note 2）	36	W
T_j	Max.Operating junction temperature	150	℃/W

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

Symbol	Parameters	Min	Typ	Max	Units	Conditions
Static Characteristics						
B_{VDSS}	Drain-Source Breakdown VoltageCurrent （Note 1）	650	--	--	mA	I_D=250μA V_{GS}=0V， T_J=25°C
$V_{GS(th)}$	Gate Threshold Voltage	2.0	--	4.0	V	V_{DS}=V_{GS}， I_D=250μA
$R_{DS(on)}$	Drain-Source On-Resistance	--	2.0	2.5	Ω	V_{GS}=10V， I_D=2.5A
I_{GSS}	Gate-Body Leakage Current	--	--	±100	nA	V_{GS}=±30V， V_{DS}=0
I_{DSS}	Zero Gate Voltage Drain Current	--	--	1	μA	V_{DS}=650V， V_{GS}=0
gfs	Forward Transconductance	1.2	--	--	S	V_{DS}=15V，I_D=2.5A
Switching Characteristics						
$T_{d\ (on)}$	Turn-On Delay Time	--	20	40	ns	V_{DS}=325V， I_D=5A， R_G=25Ω（Note 2）
T_r	Rise Time	--	45	100	ns	
$T_{d\ (off)}$	Turn-Off Delay Time	--	35	75	ns	
T_f	Fall Time	--	35	85	ns	
Qg	Total Gate Charge	--	15	20	nC	V_{DS}=520，V_{GS}=10V， I_D=5A（Note 2）
Qgs	Gate-Source Charge	--	3.5	--	nC	
Qgd	Gate-Drain Charge	--	7.5	--	nC	
Dynamic Characteristics						
Ciss	Input Capacitance	--	515	670	pF	V_{DS}=25V， V_{GS}=0， f=1MHz
Coss	Output Capacitance	--	65	80	pF	
Crss	Reverse Transfer Capacitance	--	7.5	10.5	pF	
I_S	Continuous Drain-Source Diode ForwardCurrent （Note 2）	--	--	5	A	
V_{SD}	Diode Forward On-Voltage	--	--	1.4	V	I_S=5A， V_{GS}=0
Rth(j-c)	Thermal Resistance, Junction to Case	--	--	3.47	°C/W	

Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature
Note 2: Pulse test: PW <= 300us , duty cycle <= 2%.

Ratings and Characteristic curves

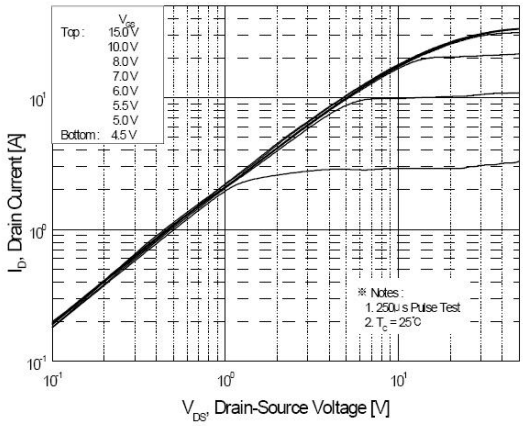


Figure 1. On-Region Characteristics

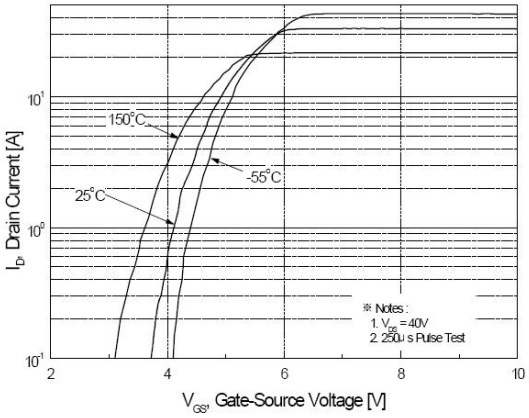


Figure 2. Transfer Characteristics

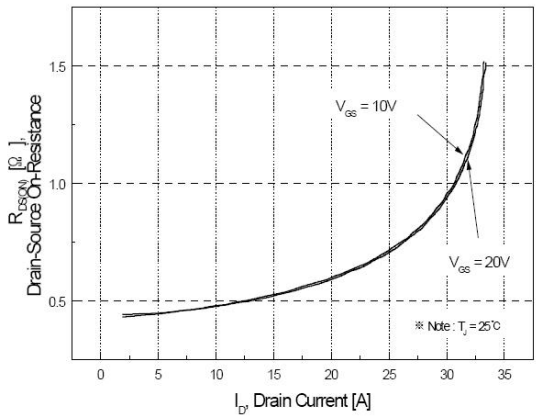


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

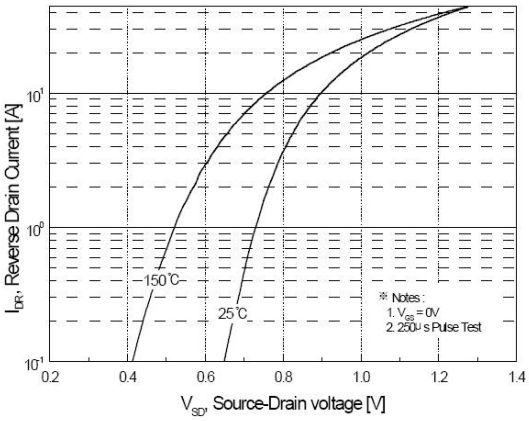


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

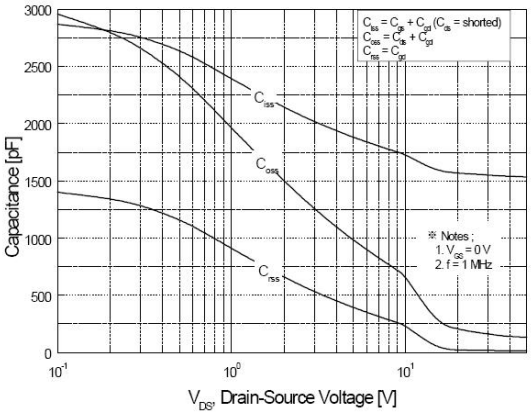


Figure 5. Capacitance Characteristics

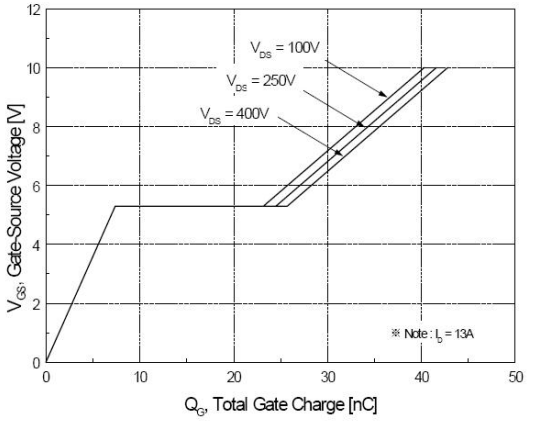


Figure 6. Gate Charge Characteristics

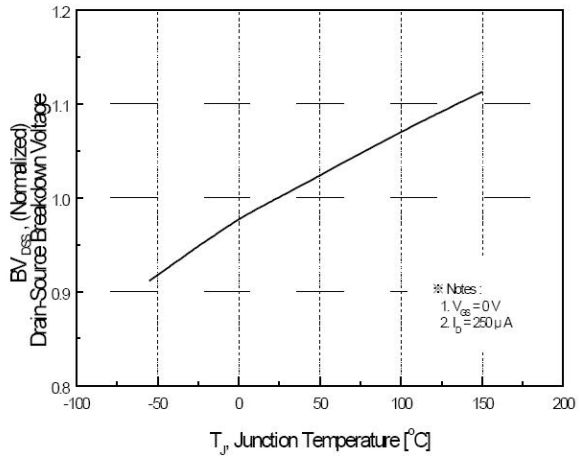


Figure 7. Breakdown Voltage Variation vs Temperature

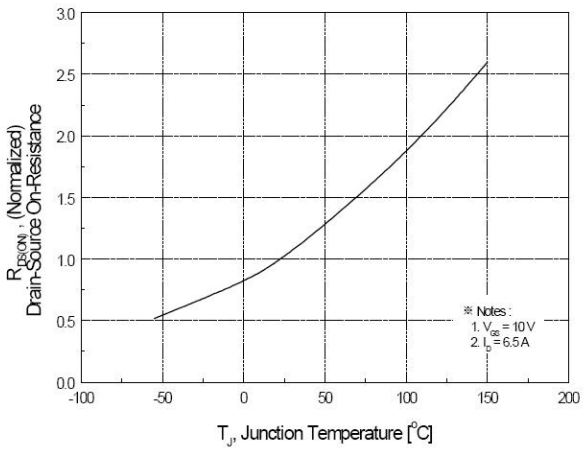


Figure 8. On-Resistance Variation vs Temperature

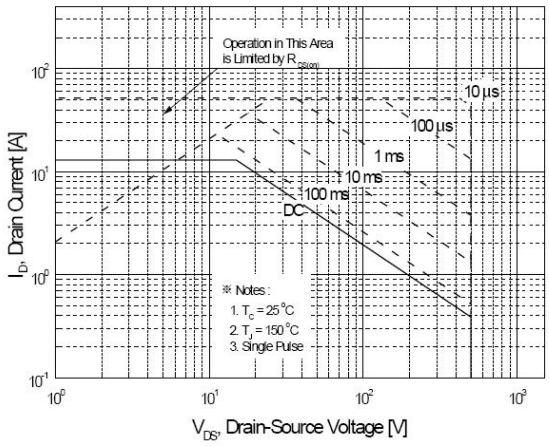


Figure 9. Maximum Safe Operating Area

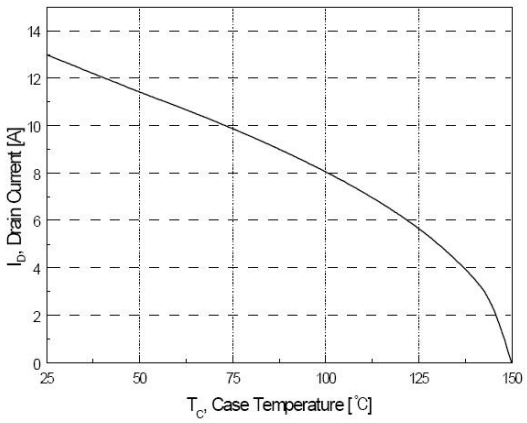


Figure 10. Maximum Drain Current vs Case Temperature

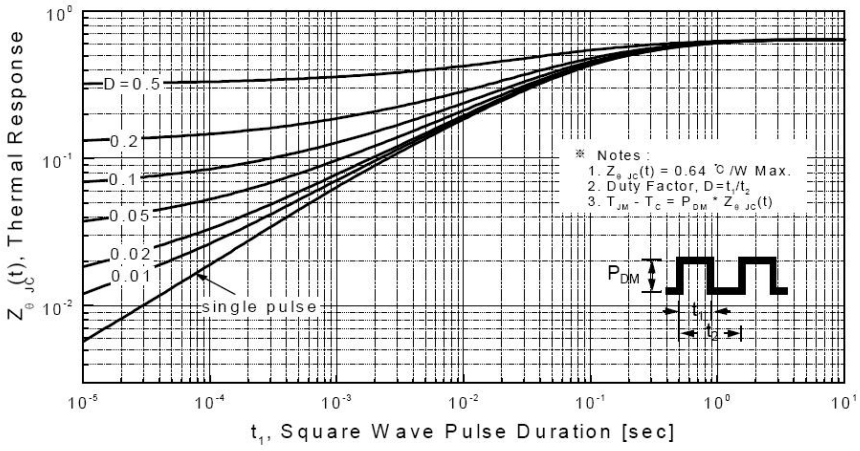
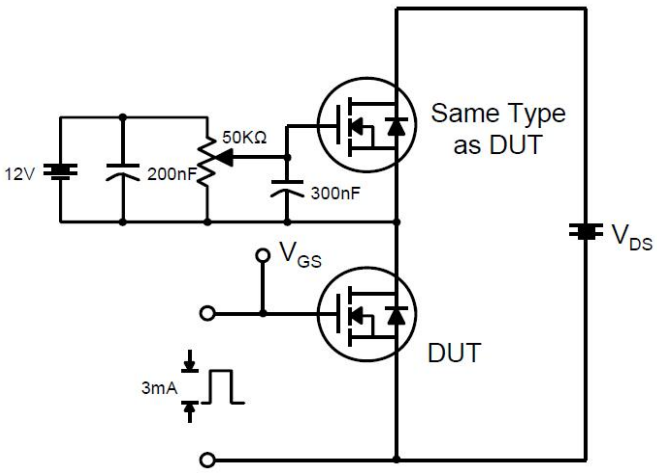


Figure 11. Transient Thermal Response Curve

Fig 12. Gate Charge Test Circuit & Waveform



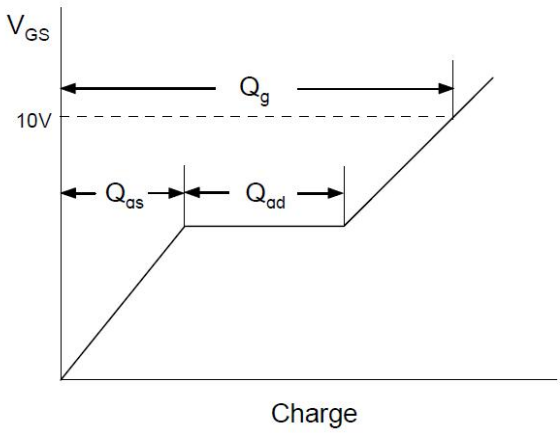
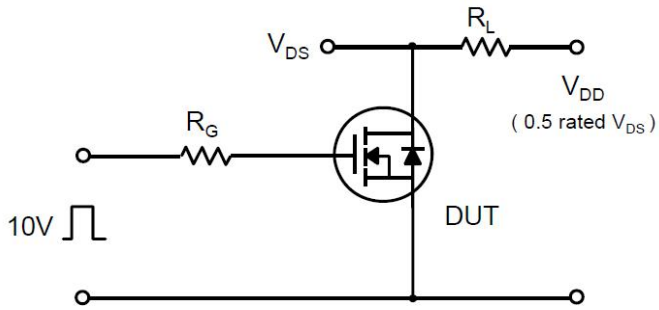


Fig 13. Resistive Switching Test Circuit & Waveforms



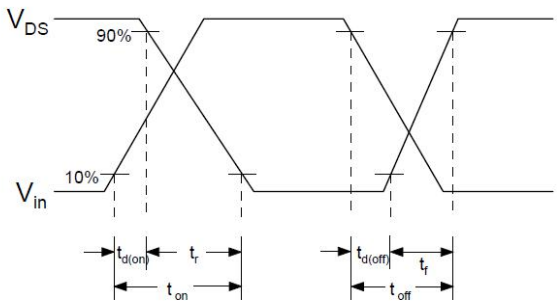
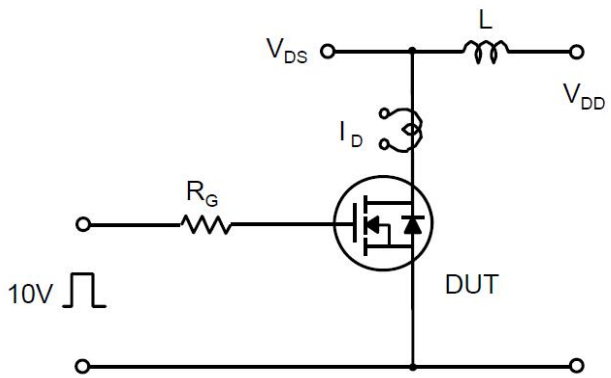


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms



$$E_{AS} = \frac{1}{2} L_L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

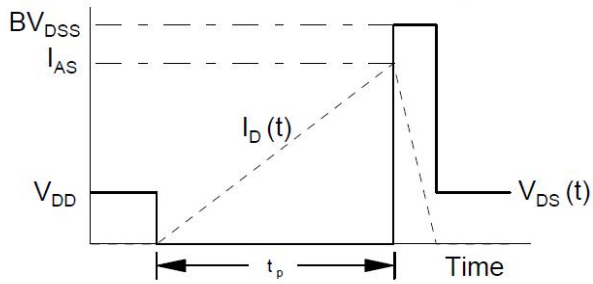
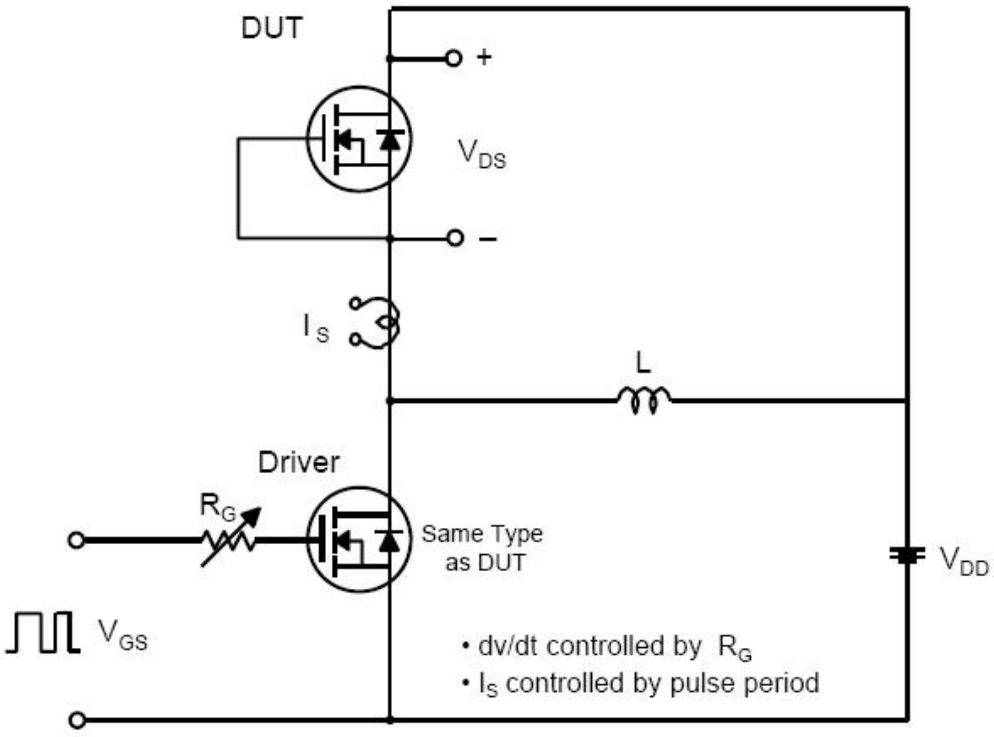
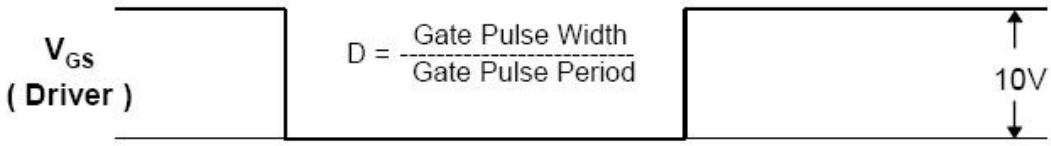
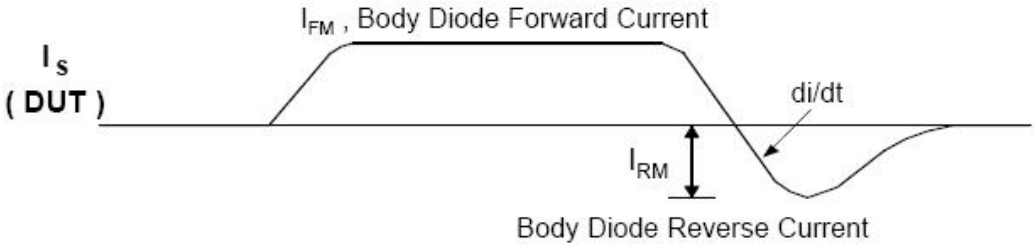
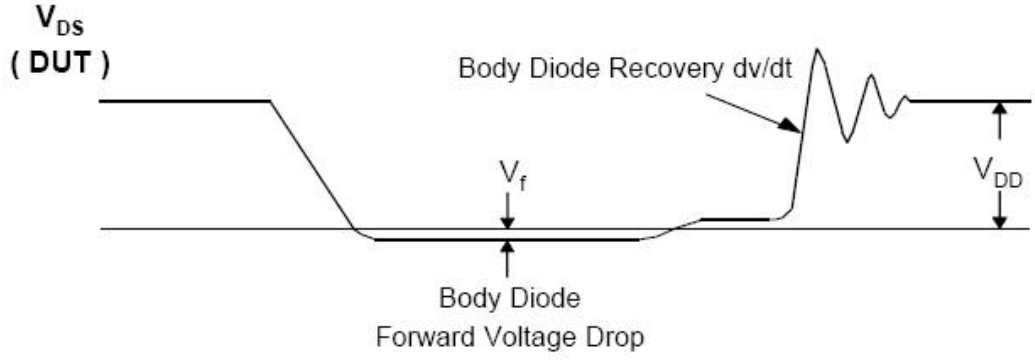


Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms

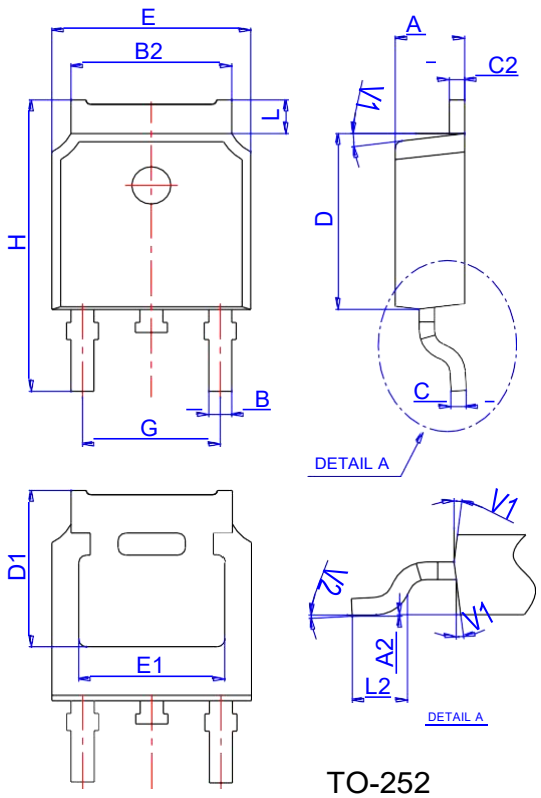








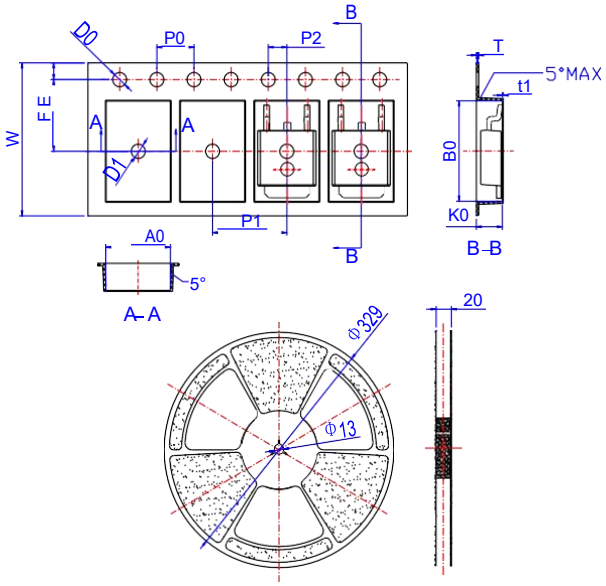
Package Mechanical Data-TO-252-JQ Single



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 Spectification-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