MY10N10D

100V N-SGT Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY10N10D use advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

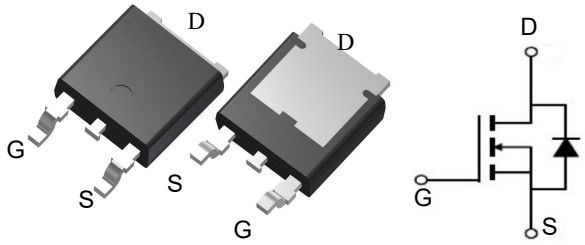
RoHS Compliant

Features

V_{DSS}	100	V
I_D	10	A
$R_{DS(ON)}$(atV_{GS}=10V)	<160	mΩ
$R_{DS(ON)}$(atV_{GS}=4.5V)	<170	mΩ

Application

- Uninterruptible power supply
- Power switching application
- Hard switched
- high frequency circuits



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY10N10D	TO-252-2L	MY10N10D	2500

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	10	A
Drain Current-Pulsed (Note 1)	I_{DM}	20	A
Maximum Power Dissipation	P_D	40	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃
Thermal Resistance,Junction-to-Case (Note 2)	$R_{\theta JC}$	3.75	℃/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.0		2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A	-	140	160	mΩ
		V_{GS}=4.5V, I_D=3A	-	160	170	
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=3A	-	5	-	S
Input Capacitance	C_{lss}	V_{DS}=50V,V_{GS}=0V, F=1.0MHz	-	650	-	PF
Output Capacitance	C_{oss}		-	25	-	PF
Reverse Transfer Capacitance	C_{rss}		-	20	-	PF
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V, R_L=19Ω V_{GS}=10V,R_G=3Ω	-	6	-	nS
Turn-on Rise Time	t_r		-	4	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=50V,I_D=3A, V_{GS}=10V	-	20.6		nC
Gate-Source Charge	Q_{gs}		-	2.1	-	nC
Gate-Drain Charge	Q_{gd}		-	3.3	-	nC
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=3A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	7	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Characteristics

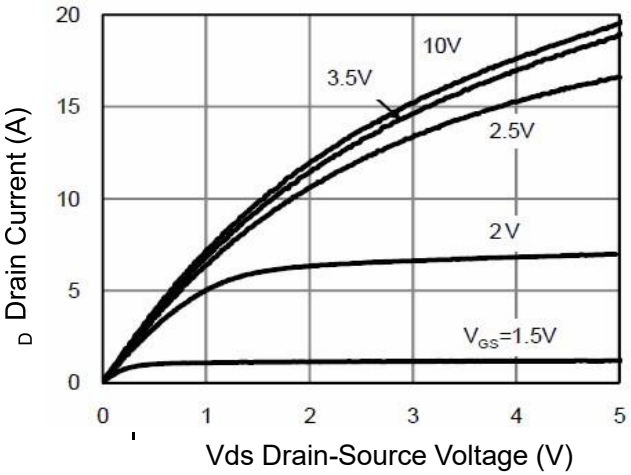


Figure 1 Output Characteristics

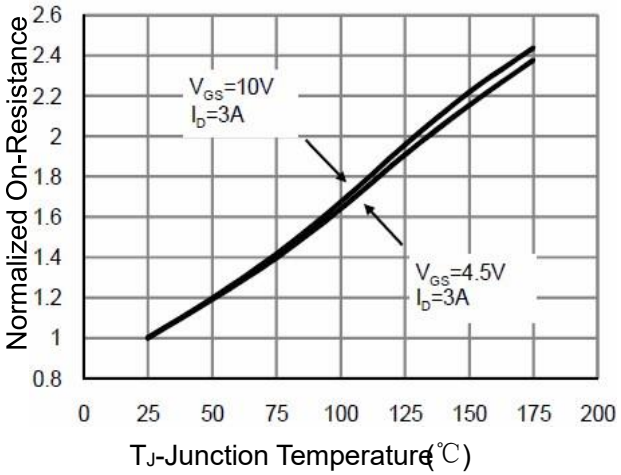


Figure 4 Rdson-Junction Temperature

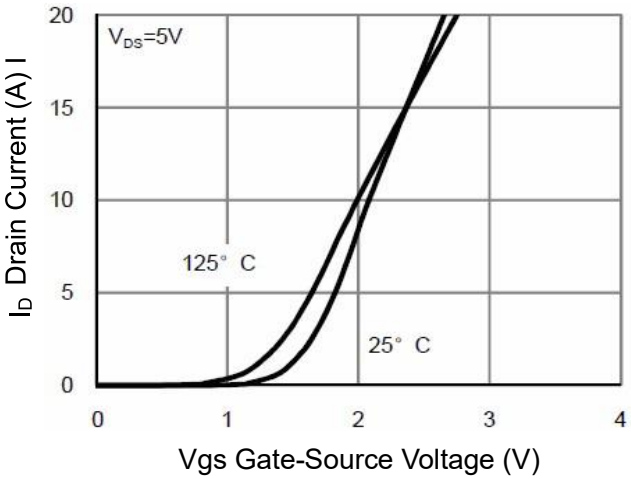


Figure 2 Transfer Characteristics

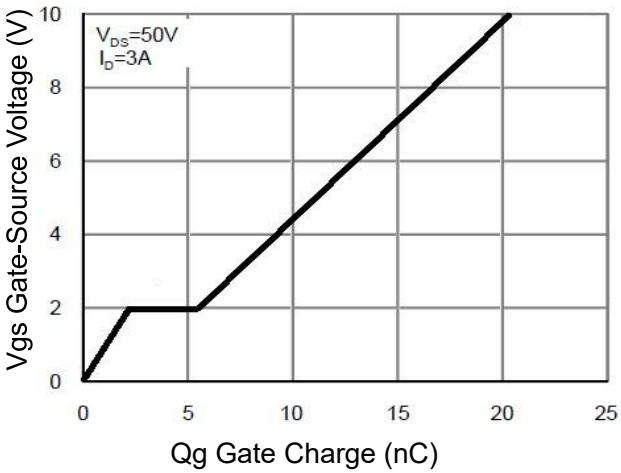


Figure 5 Gate Charge

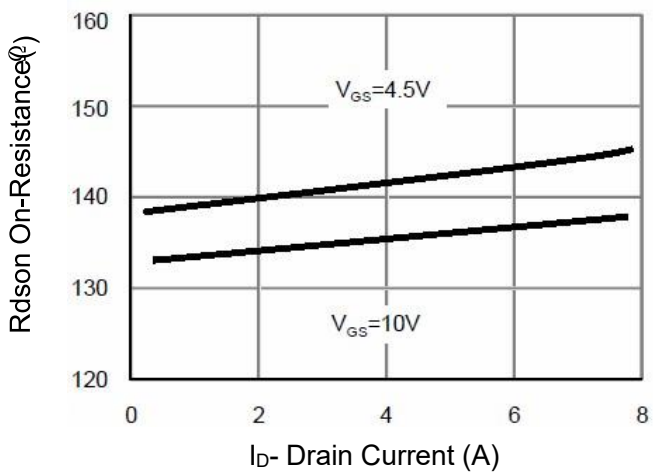


Figure 3 Rdson-Drain Current

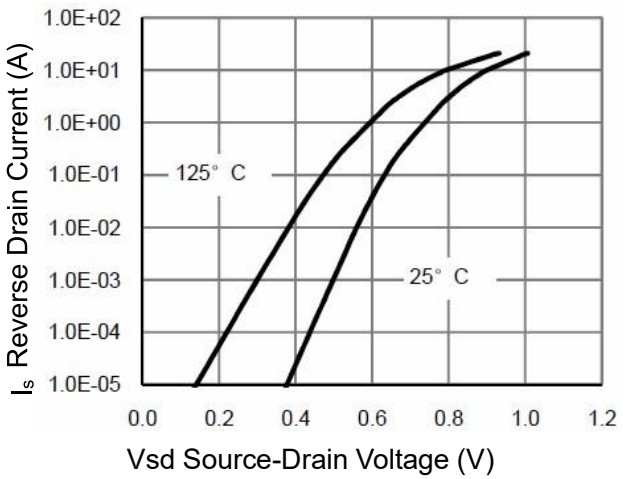


Figure 6 Source- Drain Diode Forward

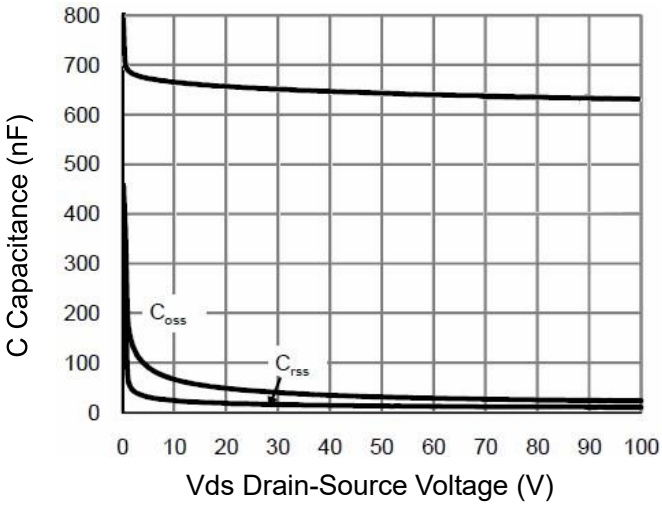


Figure 7 Capacitance vs Vds

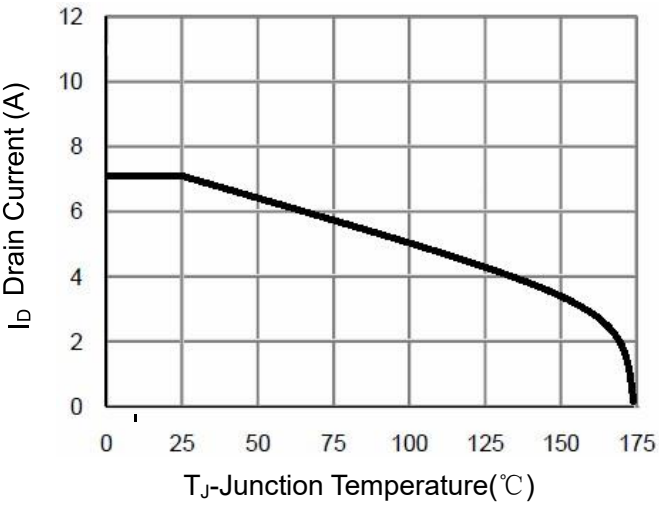


Figure 9 BV_{DSS} vs Junction Temperature

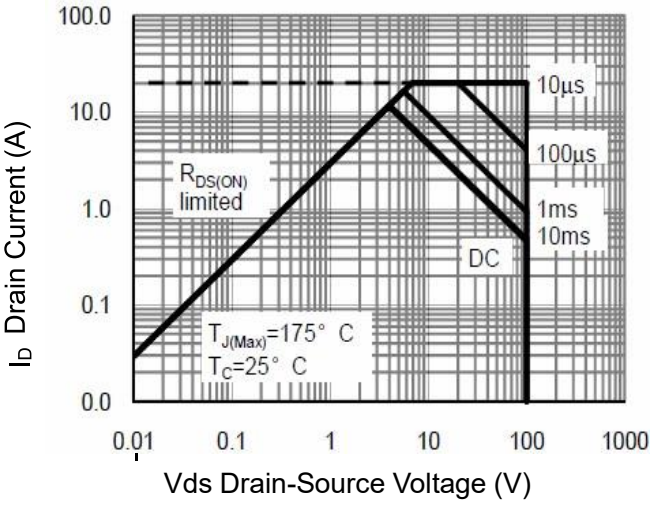


Figure 8 Safe Operation Area

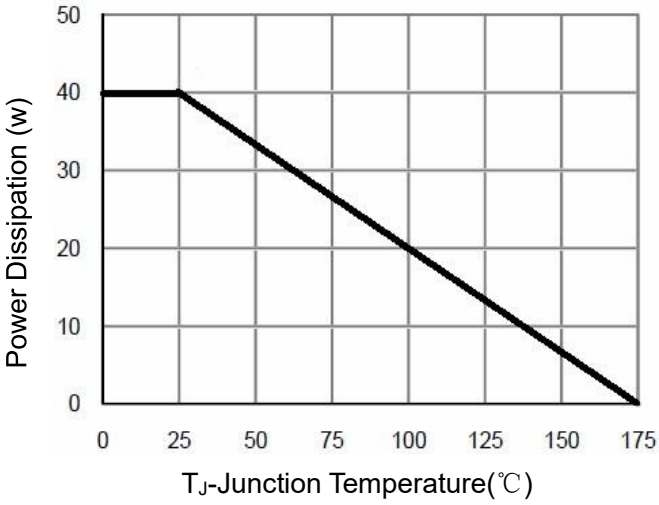


Figure 10 Power De-rating

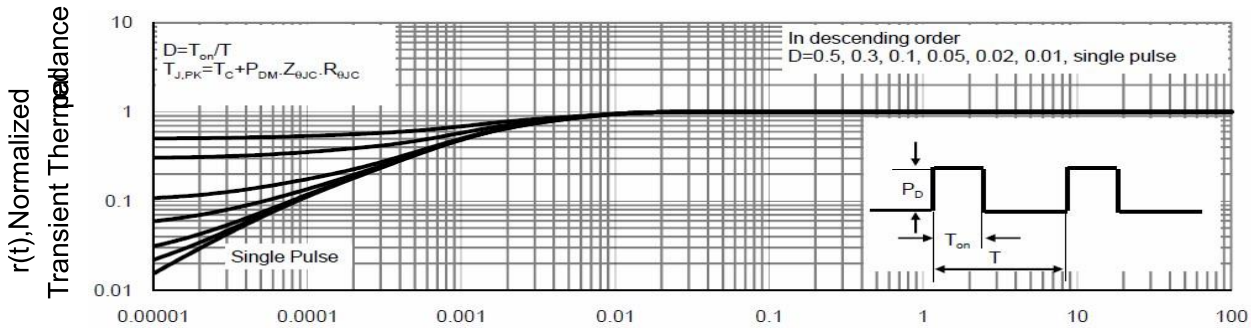
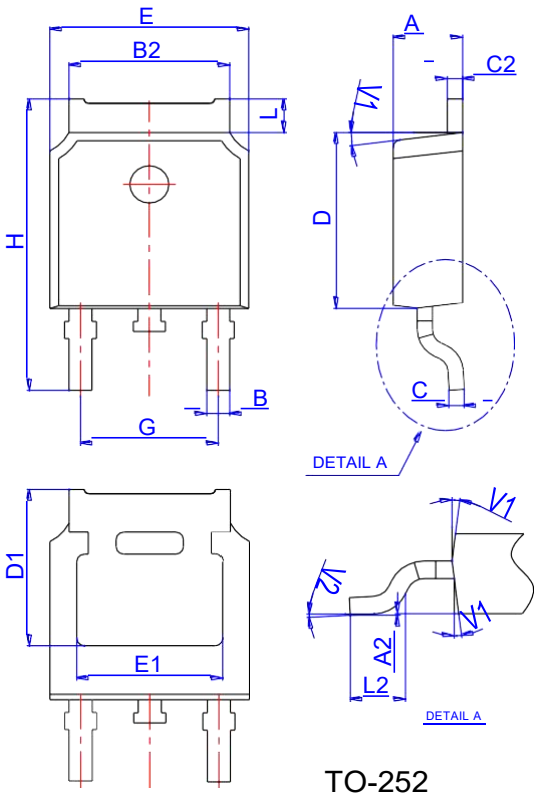


Figure 11 Normalized Maximum Transient Thermal Impedance

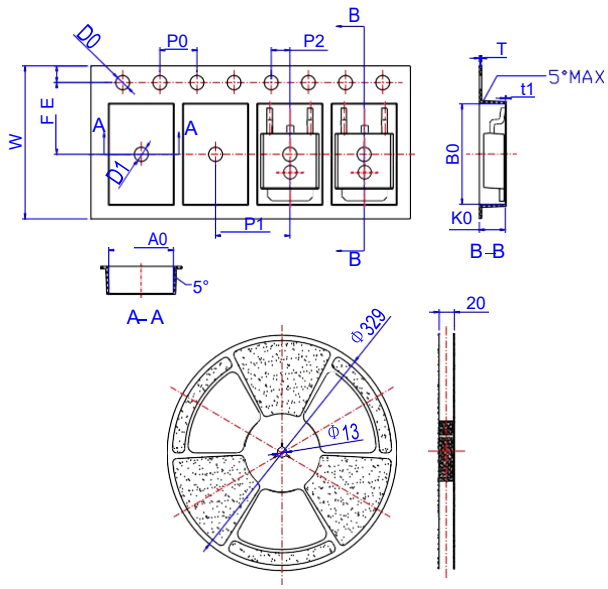
Package Mechanical Data-TO-252-JQ Single



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