MY3510D

30V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

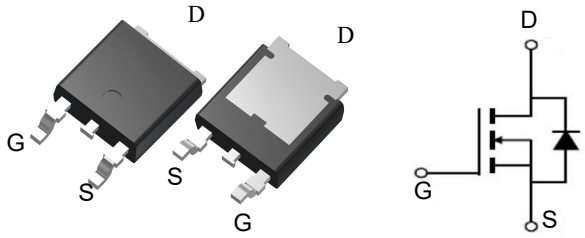
The MY3510D is the high cell density trenched N-CH MOSFETs, which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications.

Features

V_{DSS}	30	V
I_D	100	A
$R_{DS(ON)}$(atV_{GS}=10V)	2.7	mΩ
$R_{DS(ON)}$(atV_{GS}=4.5V)	5.5	mΩ

Application

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY3510D	TO-252	MY3510	2500

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	TC = 25℃	100	A
		TC = 100℃	65	A
I_{DM}	Pulsed Drain Current note1		400	A
EAS	Single Pulsed Avalanche Energy note2		95	mJ
P_D	Power Dissipation	TC = 25℃	80	W
RθJC	Thermal Resistance, Junction to Case		1.9	℃/W
TJ, TSTG	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics at T_J=25 ℃ unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V,ID=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	VDS =30V, VGS = 0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	VDS =0V,VGS = ±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	VDS= VGS, ID=250μA	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	VGS =10V, ID =30A	-	2.7	4.0	mΩ
		VGS =4.5V, ID =20A	-	5.5	10	
C_{iss}	Input Capacitance	VDS =15V, VGS =0V, f = 1.0MHz	-	2100	-	pF
C_{oss}	Output Capacitance		-	326	-	pF
C_{rss}	Reverse Transfer Capacitance		-	282	-	pF
Q_g	Total Gate Charge	VDS =15V, ID =30A, VGS =10V	-	45	-	nC
Q_{gs}	Gate-Source Charge		-	3	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	15	-	nC
$t_{d(on)}$	Turn-on Delay Time	VDS=15V, ID=30A, RGEN=3Ω, VGS =10V	-	21	-	ns
t_r	Turn-on Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	59	-	ns
t_f	Turn-off Fall Time		-	34	-	ns
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	50	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	200	A
V_{SD}	Drain to Source Diode Forward Voltage	VGS = 0V, IS=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	IF=20A,dI/dt=100A/μs	-	15	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	4	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃, V_G=10V, R_G=25Ω，L=0.5mH，I_{AS}=18.4A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

Figure1: *Output Characteristics*

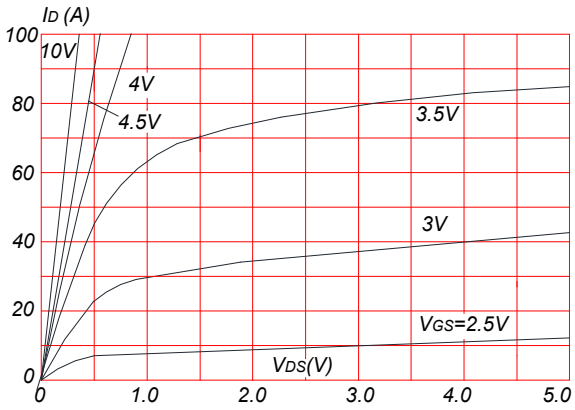


Figure 2: *Typical Transfer Characteristics*

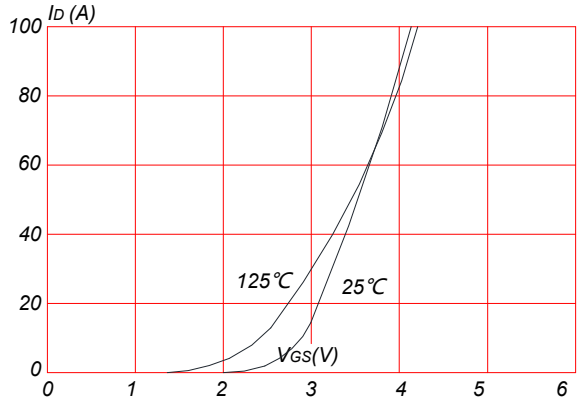


Figure 3:*On-resistance vs. Drain Current*

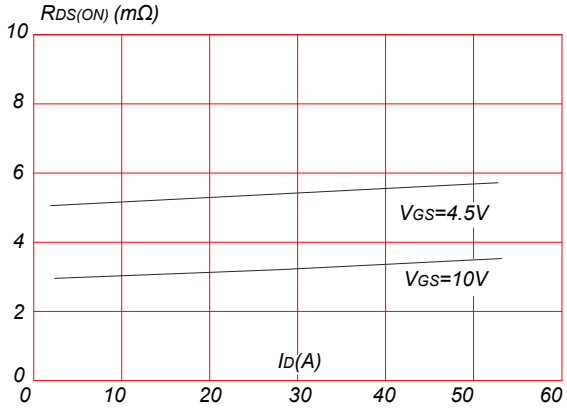


Figure 4*: Body Diode Characteristics*

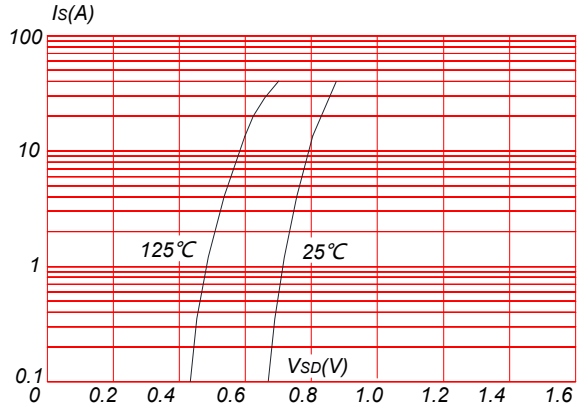


Figure 5: *Gate Charge Characteristics*

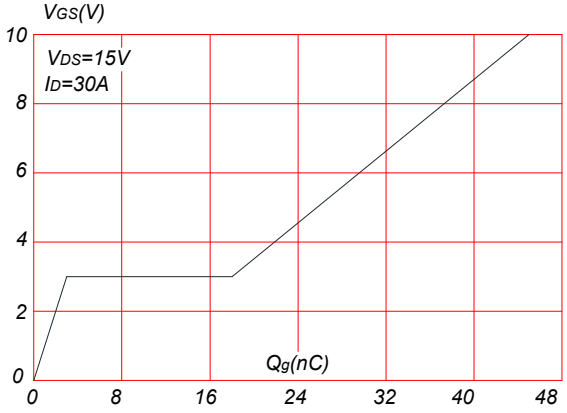


Figure 6: *Capacitance Characteristics*

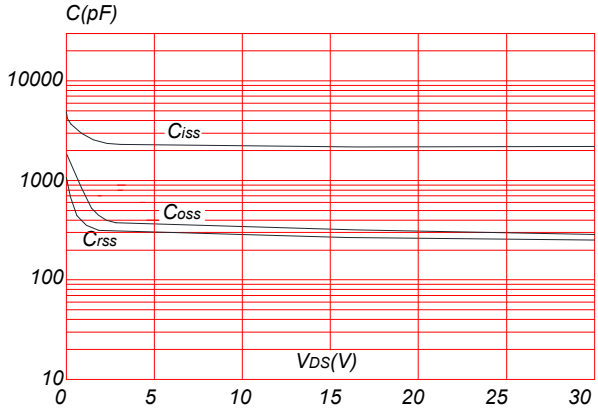


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

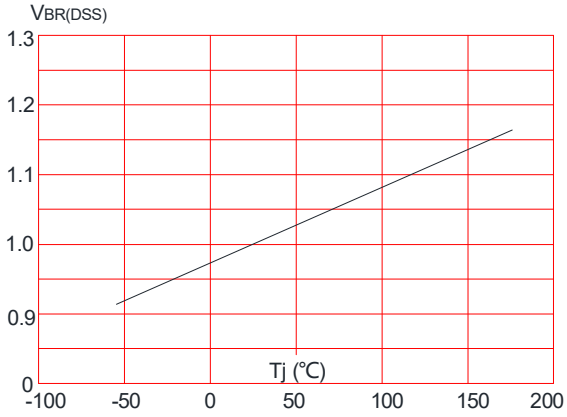


Figure 8: Normalized on Resistance vs. Junction Temperature

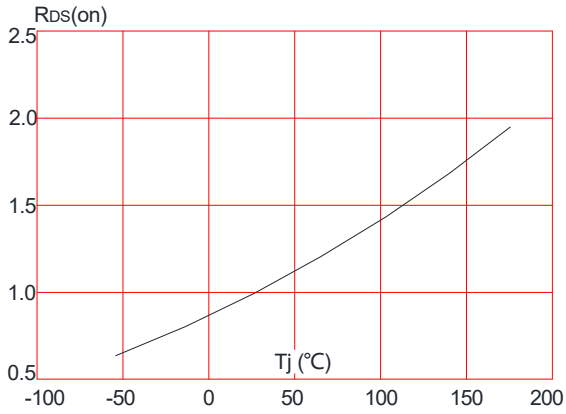


Figure 9: Maximum Safe Operating Area

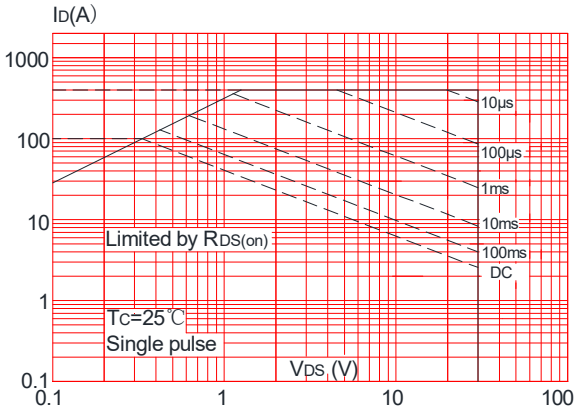


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

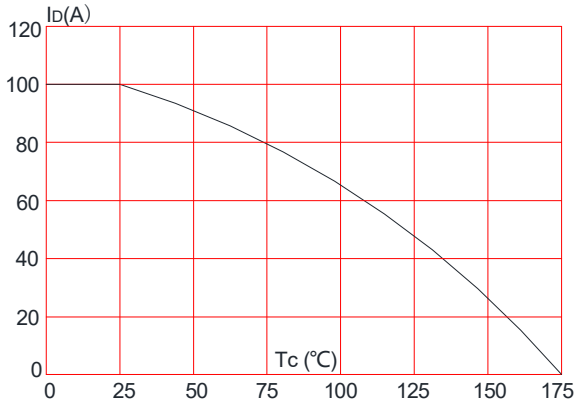
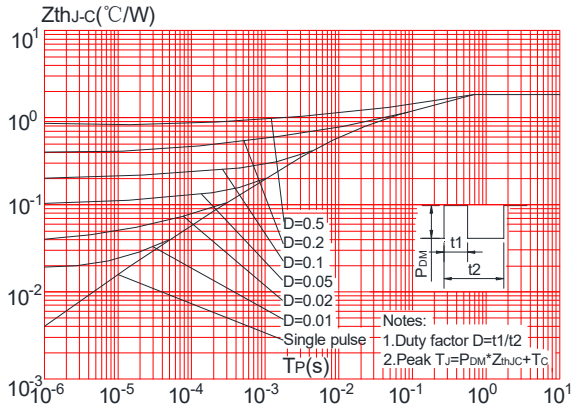


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



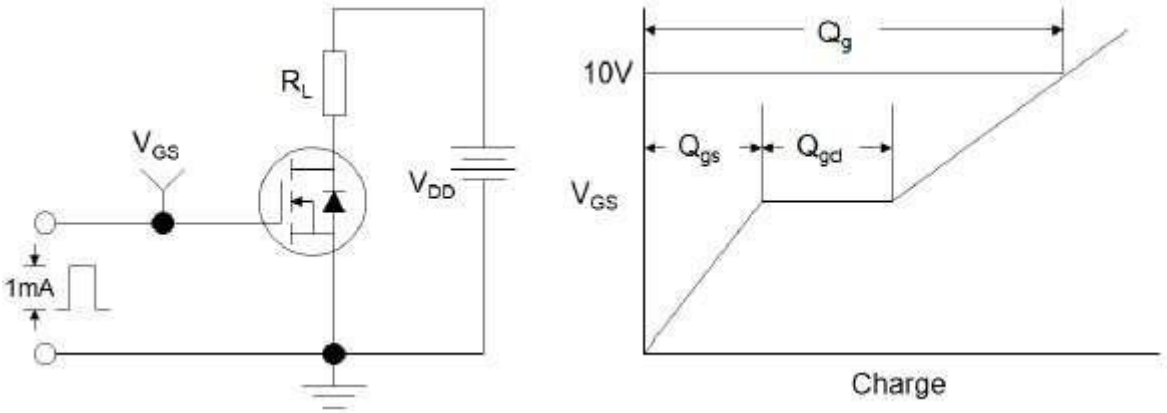


Figure1:Gate Charge Test Circuit & Waveform

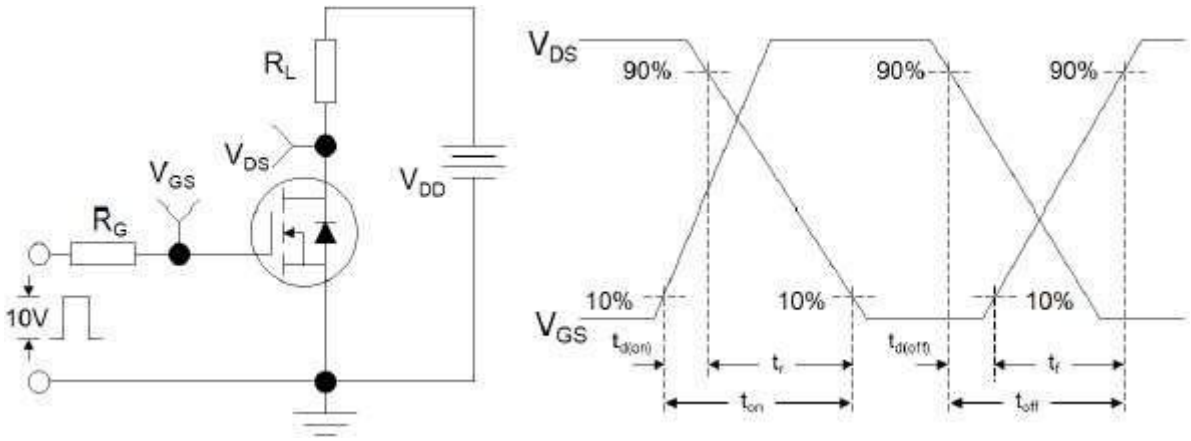


Figure 2: Resistive Switching Test Circuit & Waveforms

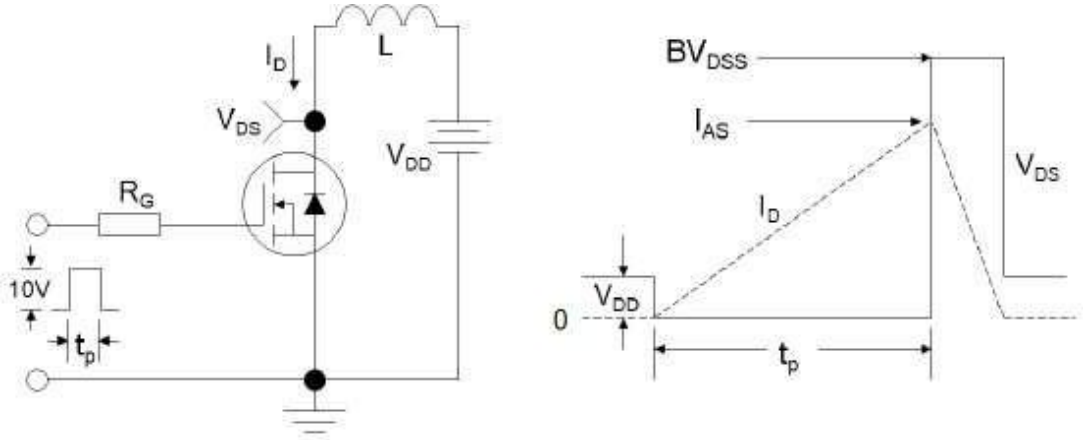
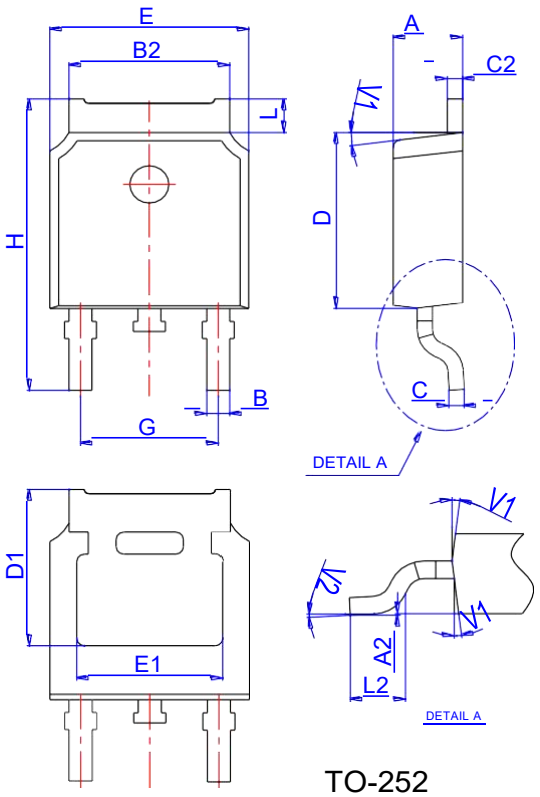


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

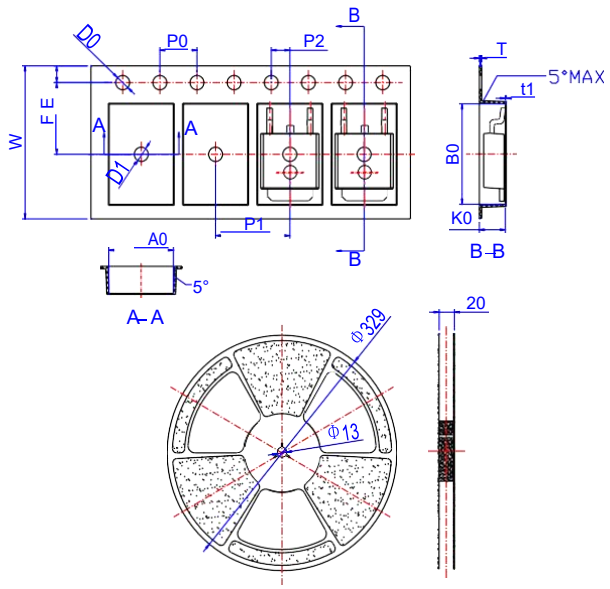
Package Mechanical Data TO-252



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