MY30P06D

60V P-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

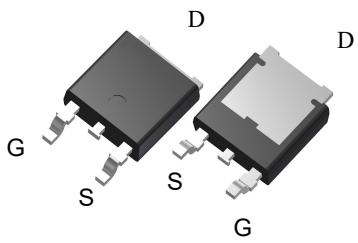
The MY30P06D uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

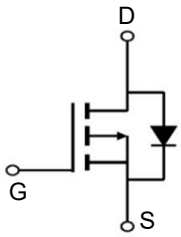
Features

V_{DSS}	-60	V
I_D	-30	A
$R_{DS(ON)}$(atV_{GS}=10V)	31	mΩ
$R_{DS(ON)}$(atV_{GS}=4.5V)	42	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY30P06D	TO-252-2L	MY30P06D	2500

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	VDS	-60	V
Gate-Source Voltage	VGS	±20	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D(25℃)	-30	A
	I_D(70℃)	-20	A
	IDM	-60	A
Maximum Power Dissipation	P_D	60	W
Operating Junction and Storage Temperature Range	TJ,TSTG	-55 To 175	℃
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	25	℃/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	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-48V,V_{GS}=0V			-1	μA
Gate- Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.8	-2.5	V
Drain- Source On- State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-20A		31	40	mΩ
		V_{GS}=-4.5V, I_D=-20A		42	55	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-20A	5			S
Input Capacitance	C_{lss}	V_{DS}=- 30V,V_{GS}=0V, F=1.0MHz		3060		PF
Output Capacitance	C_{oss}			300		PF
Reverse Transfer Capacitance	C_{rss}			205		PF
Turn- on Delay Time	$t_{d(on)}$	V_{DS}=-30V,V_{GS}=-10V ,R_{GEN}=3Ω I_D=1A		14		nS
Turn- on Rise Time	t_r			20		nS
Turn- Off Delay Time	$t_{d(off)}$			40		nS
Turn- Off Fall Time	t_f			19		nS
Total Gate Charge	Q_g	V_{DS}=-30V,I_D=-20A,V_{GS}=-10V		48		nC
Gate- Source Charge	Q_{gs}			11		nC
Gate- Drain Charge	Q_{gd}			10		nC
Body Diode Reverse Recovery Time	T_{rr}	I_F=-20A, dI/dt=100A/μs		40		nS
Body Diode Reverse Recovery Charge	Q_{rr}			56		nC
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-1A		-0.72	-1	V

NOTES:

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

Typical Characteristics

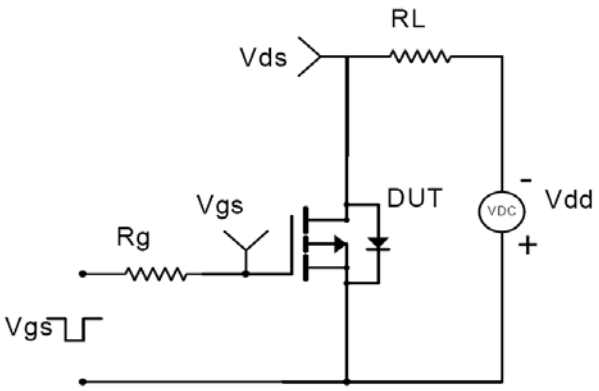


Figure 1:Switching Test Circuit

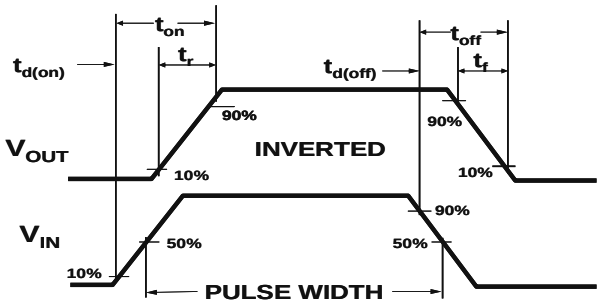


Figure 2:Switching Waveforms

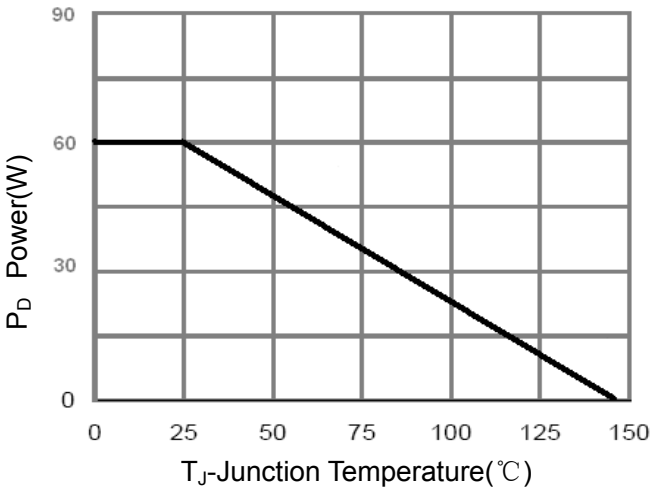


Figure 3 Power Dissipation

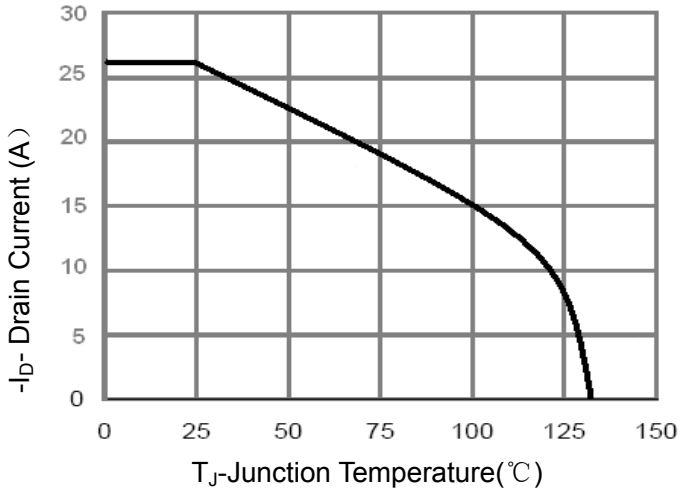


Figure 4 Drain Current

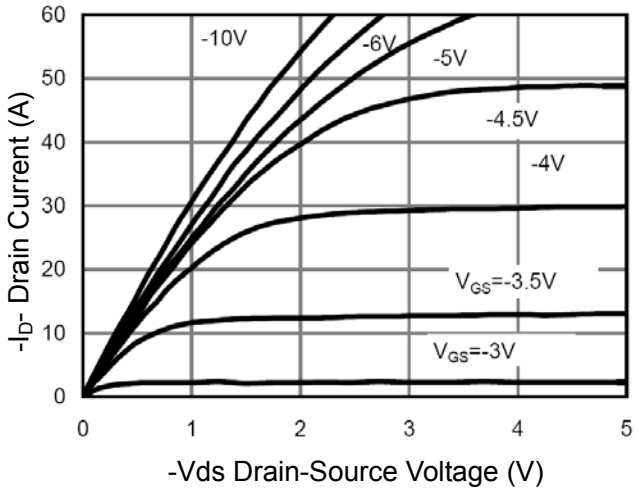


Figure 5 Output CHARACTERISTICS

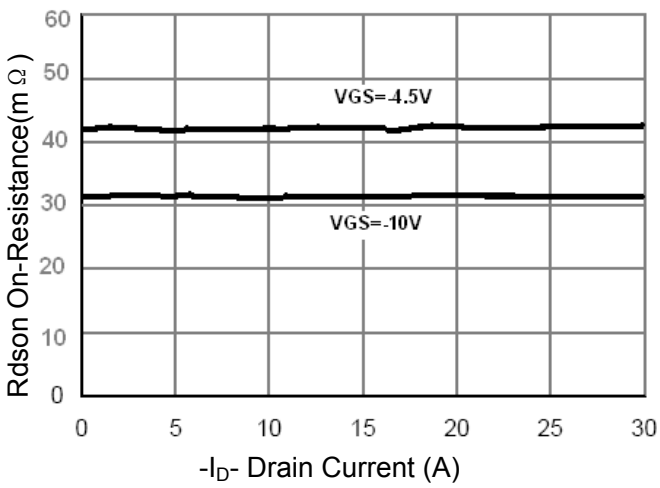


Figure 6 Drain-Source On-Resistance

Fig.5 Normalized $V_{GS(th)}$ v.s T_J

Fig.6 Normalized R_{DSON} v.s T_J

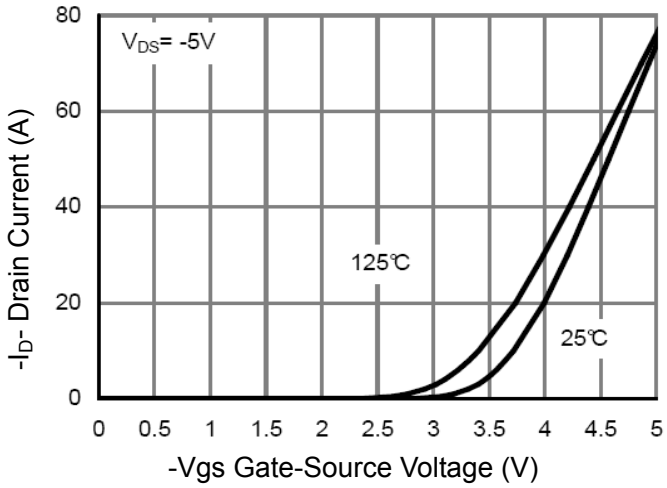


Figure 7 Transfer Characteristics

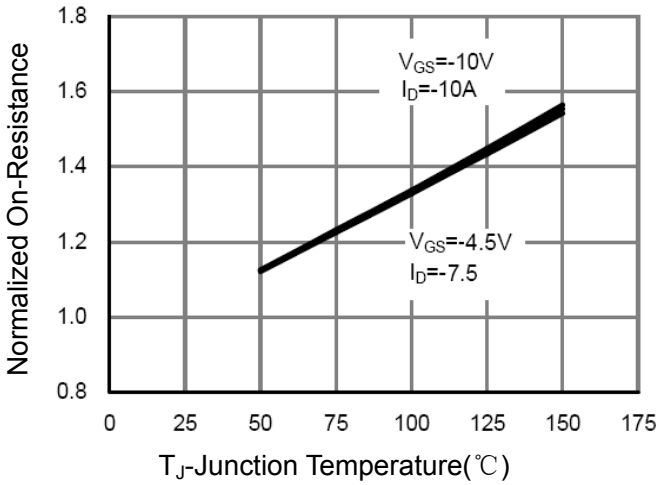


Figure 8 Drain-Source On-Resistance

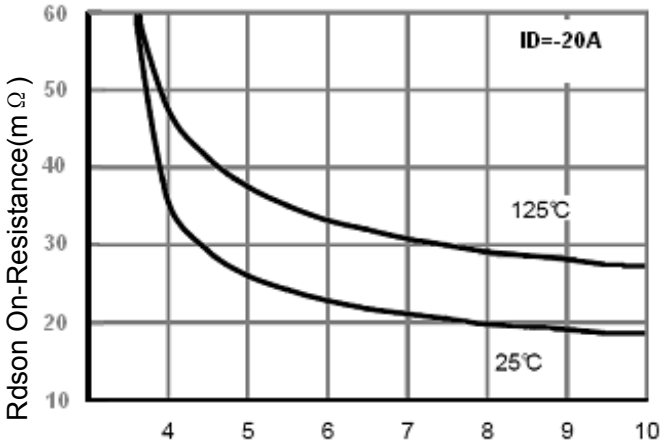


Figure 9 Rdson vs Vgs

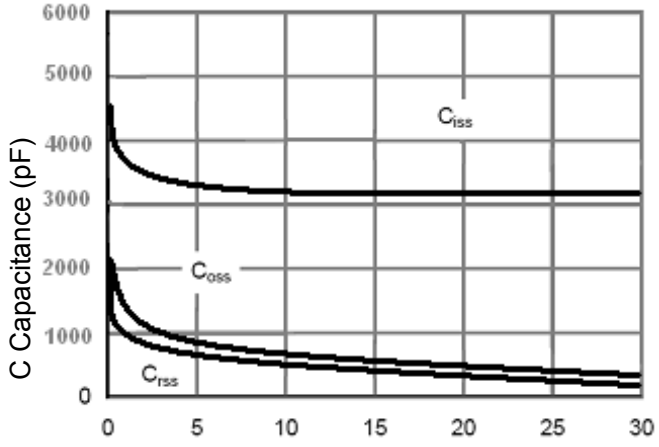


Figure 10 Capacitance vs Vds

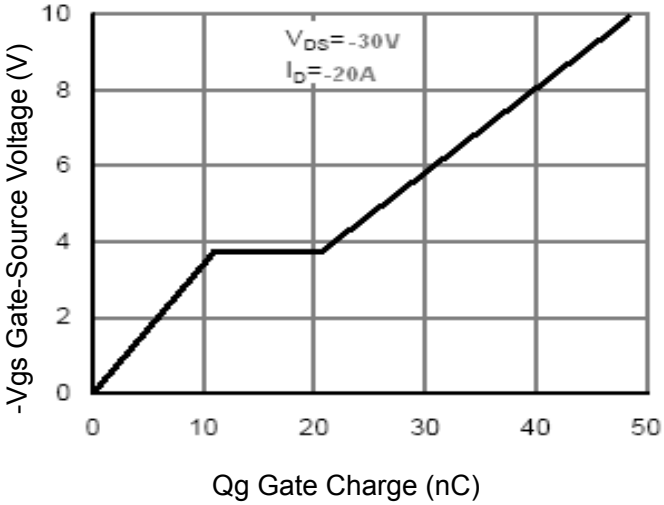


Figure 11 Gate Charge

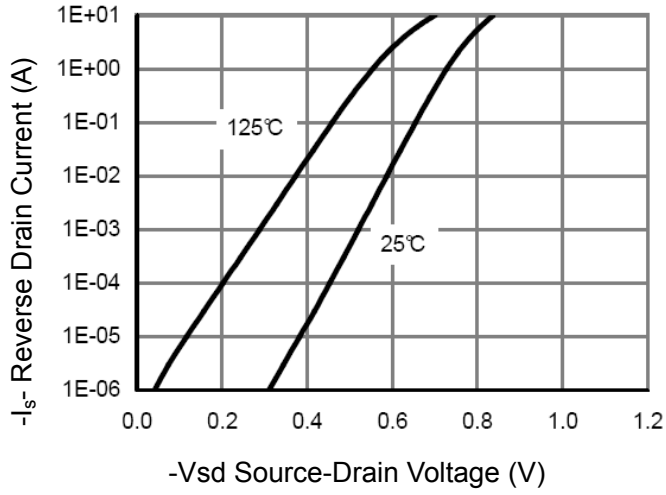


Figure 12 Source- Drain Diode Forward

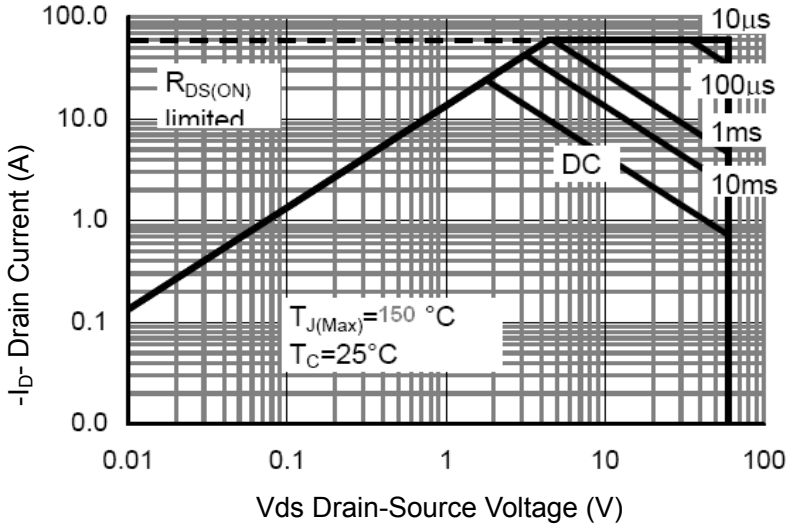


Figure 13 Safe Operation Area

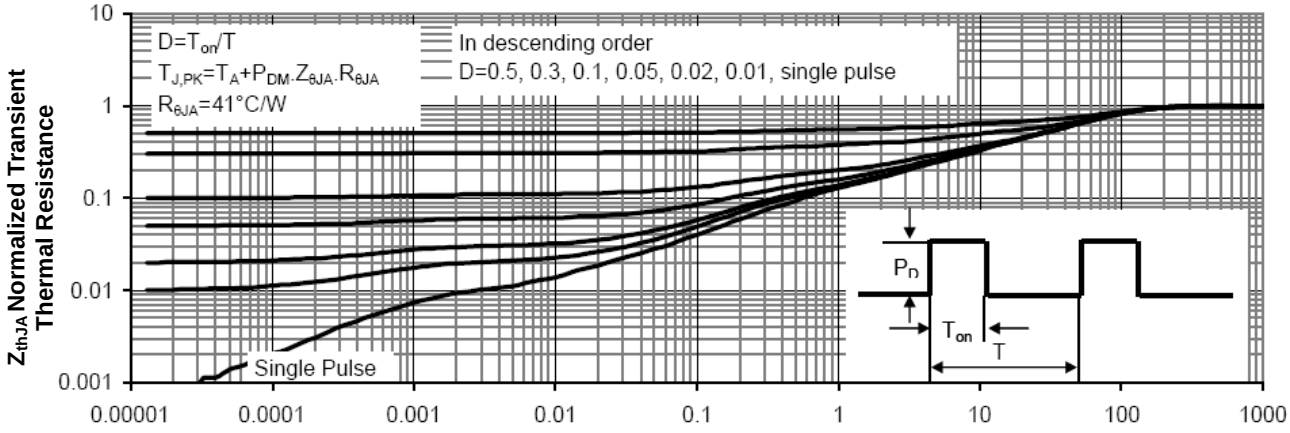
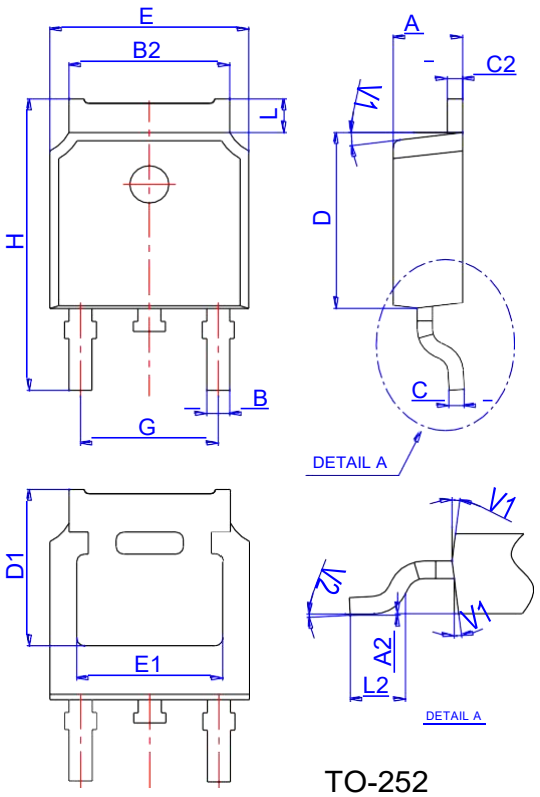


Figure 14 Normalized Maximum Transient Thermal Impedance

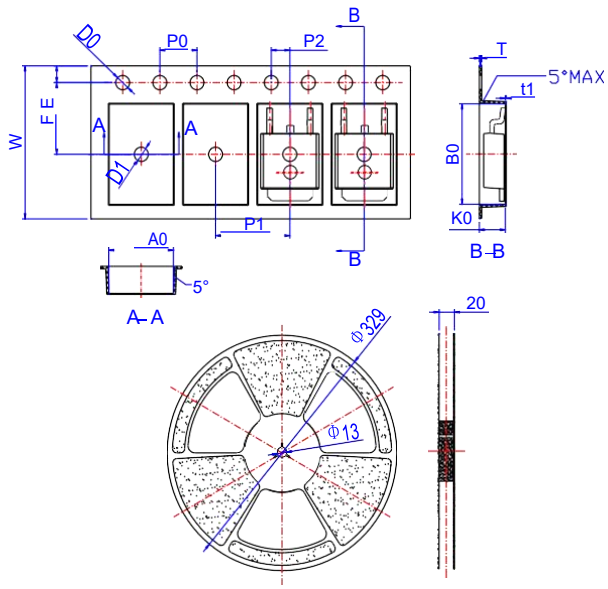
Package Mechanical Data-TO-252-JQ Single



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