

General Description

The MY10N20D is silicon N-CH Enhanced VDMOSFETS is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

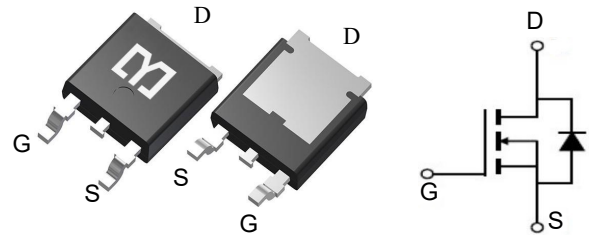


Features

V_{DSS}	200	V
I_D	10	A
$P_D(T_C=25^{\circ}C)$	74	W
$R_{DS(ON)}(at V_{GS}=4.5V)$	320	$m\Omega$

Application

- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY10N20D	TO-252-2L	MY10N20D	2500

Absolute Maximum Ratings ($T_C=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS} = 0V$)	V_{DSS}	200	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current	I_{DM}	36	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulse Avalanche Energy	E_{AS}	100	mJ
Avalanche Current	I_{AR}	7.5	A
Repetitive Avalanche Energy	E_{AR}	8.1	mJ
Power Dissipation ($T_C = 25^{\circ}C$)	P_D	74	W
Thermal Resistance, Junction-to-Case	R_{thJC}	1.7	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^{\circ}C$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	200	222	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 200V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	5	μA
		$V_{DS} = 160V, V_{GS} = 0V, T_J = 125^\circ\text{C}$	--	--	100	
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	2.9	4	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.5A$	--	320	380	m Ω
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 25V$ $f = 1.0MHz$	--	684	--	pF
Output Capacitance	C_{oss}		--	103	--	
Reverse Transfer Capacitance	C_{rss}		--	37	--	
Total Gate Charge	Q_g	$V_{DD} = 160V, I_D = 5.0A,$ $V_{GS} = 10V$	--	23	--	nC
Gate-Source Charge	Q_{gs}		--	2.5	--	
Gate-Drain Charge	Q_{gd}		--	9	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 100V, I_D = 5.0A,$ $R_G = 25\Omega$	--	12	--	ns
Turn-on Rise Time	t_r		--	22	--	
Turn-off Delay Time	$t_{d(off)}$		--	50	--	
Turn-off Fall Time	t_f		--	48	--	
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	10	A
Pulsed Diode Forward Current	I_{SM}		--	--	36	
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 5A, V_{GS} = 0V$	--	--	1.4	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, I_S = 5A,$ $di_F/dt = 100A/\mu s$	--	190	--	ns
Reverse Recovery Charge	Q_{rr}		--	1.7	--	μC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS} = 3A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

Typical Characteristics

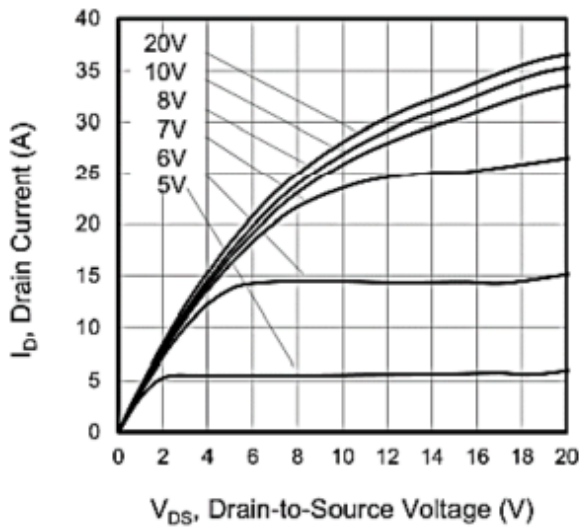


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

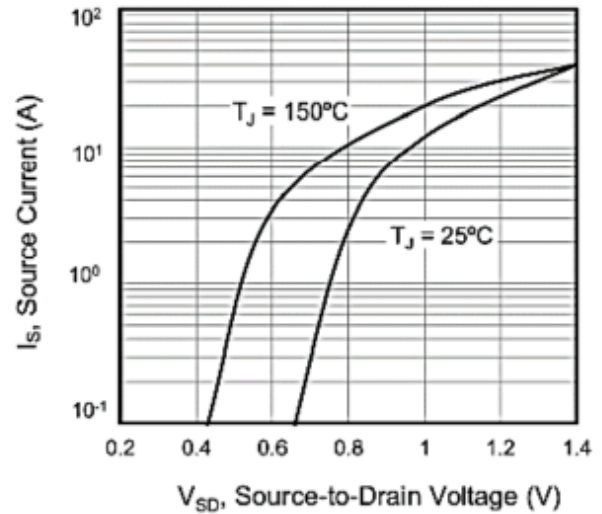


Figure 2. Body Diode Forward Voltage

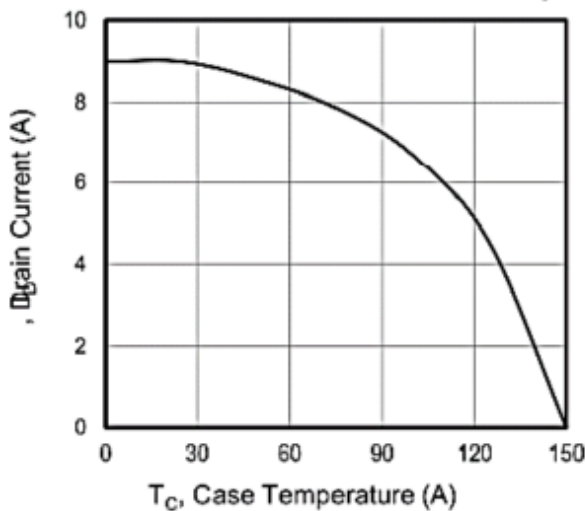


Figure 3. Drain Current vs. Temperature

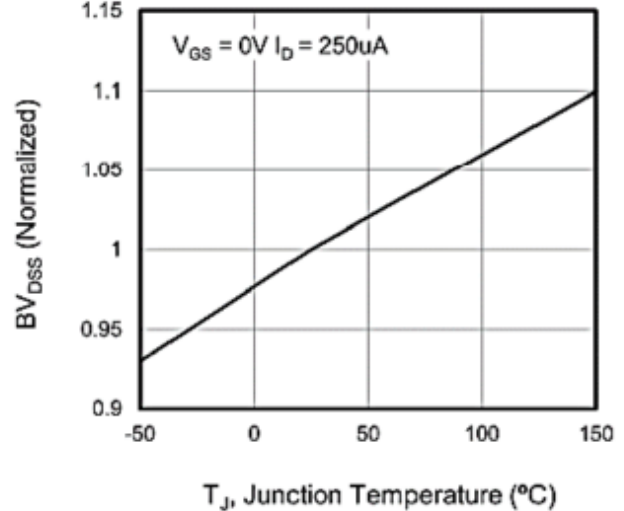


Figure 4. BV_{DS} Variation vs. Temperature

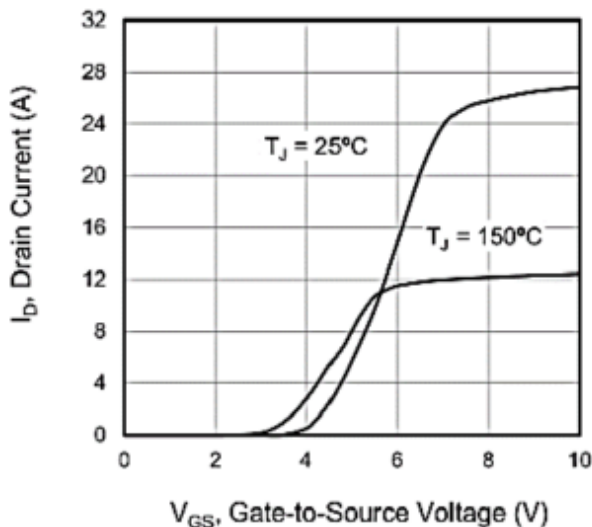


Figure 5. Transfer Characteristics

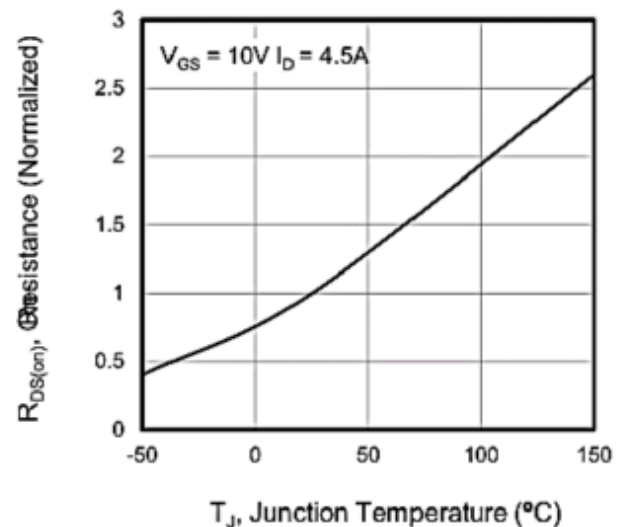


Figure 6. On-Resistance vs. Temperature

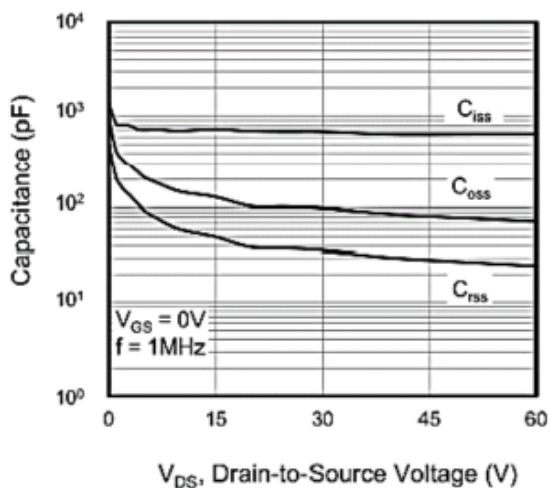


Figure 7. Capacitance

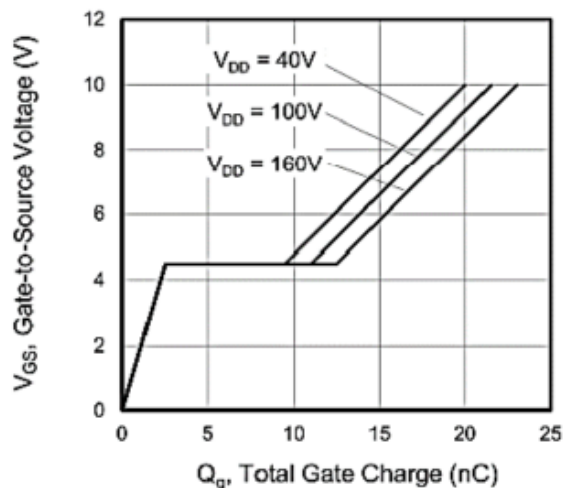


Figure 8. Gate Charge

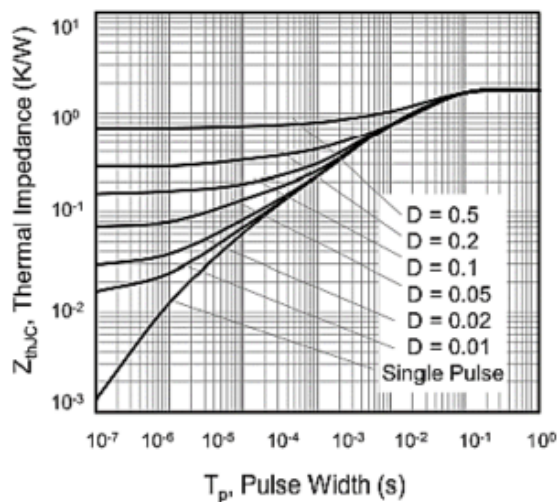


Figure 10. Transient Thermal Impedance

Technical drawing of the TQ-252 connector, showing three views: front, side, and detail A.

Front View (Top Left): Shows the overall dimensions of the connector. The total width is E , the width of the top flange is $B2$, the height of the top flange is L , the total height is H , the width of the base is G , and the width of the base flange is B . A central circular feature is indicated by a dashed line.

Side View (Top Right): Shows the profile of the connector. The total height is D , the width of the top flange is A , and the width of the base flange is $C2$. A detail callout $V1$ points to the top flange.

Detail A (Bottom Right): A magnified view of the base flange, showing the width $A2$, the height $L2$, and the width of the base flange C . Detail callouts $V1$, $V2$, and $V3$ point to specific features of the base flange.

Front View (Bottom Left): Shows the overall dimensions of the connector. The total width is $E1$, the height of the top flange is $D1$, and the width of the base flange is B . A central circular feature is indicated by a dashed line.

Side View (Bottom Right): Shows the profile of the connector. The total height is D , the width of the top flange is A , and the width of the base flange is $C2$. A detail callout $V1$ points to the top flange.

Detail A (Bottom Right): A magnified view of the base flange, showing the width $A2$, the height $L2$, and the width of the base flange C . Detail callouts $V1$, $V2$, and $V3$ point to specific features of the base flange.

TQ-252

Technical drawing of a mechanical component, showing multiple views and dimensions:

- Front View (Top):** Shows a rectangular component with four internal cavities. Dimensions include overall width W , overall height B , and section line $A-A$. Specific dimensions include $D0$, $P0$, $P2$, F , E , A , $P1$, and B .
- Side View (Right):** Shows the profile of the component. Dimensions include total height T , top flange thickness $t1$, internal cavity height $B0$, and bottom flange thickness $K0$. A note indicates a maximum angle of 5°MAX .
- Section A-A (Bottom Left):** A cross-section view showing a width of $A0$ and a 5° chamfer.
- Top View (Bottom):** A circular view showing a five-spoke design. Dimensions include outer diameter $\phi 320$ and inner hole diameter $\phi 13$.
- Section B-B (Bottom Right):** A cross-section view showing a width of 20 and a central feature with a diameter of $\phi 13$.

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°

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