

General Description

The MY15N12D 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.

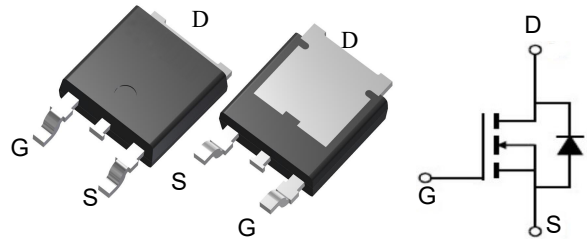


Features

V_{DSS}	120	V
I_D	15	A
$R_{DS(ON)}(at V_{GS}=10V)$	120	m Ω
$R_{DS(ON)}(at V_{GS}=4.5V)$	125	m Ω

Application

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



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY15N12D	TO-252-2L	MY15N12D	2500

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	120	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_c=25^{\circ}\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	15	A
$I_D@T_c=100^{\circ}\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	9.2	A
I_{DM}	Pulsed Drain Current ²	58	A
EAS	Single Pulse Avalanche Energy ³	20	mJ
$P_D@T_c=25^{\circ}\text{C}$	Total Power Dissipation ³	66	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	30	$^{\circ}\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.9	$^{\circ}\text{C/W}$

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

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	120	-	-	V
Gate-body Leakage current		I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = 120V, V _{GS} = 0V	-	-	1	μA
	T _J =100°C			-	-	100	
Gate-Threshold Voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	2	3	V
Drain-Source On-Resistance ⁴		R _{DS(on)}	V _{GS} = 10V, I _D = 10A	-	120	160	mΩ
			V _{GS} = 4.5V, I _D = 6A	-	125	170	
Forward Transconductance ⁴		g _{fs}	V _{DS} = 10V, I _D = 10A	-	14.5	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C _{iss}	V _{GS} =0V, V _{DS} = 60V, f =1MHz	-	1076	-	pF
Output Capacitance		C _{oss}		-	27	-	
Reverse Transfer Capacitance		C _{rss}		-	20	-	
Gate Resistance		R _g	f =1MHz	-	1.1	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q _g	V _{GS} = 10V, V _{DS} = 60V, I _D = 10A	-	23	-	nC
Gate-Source Charge		Q _{gs}		-	3.5	-	
Gate-Drain Charge		Q _{gd}		-	5	-	
Turn-On Delay Time		t _{d(on)}	V _{GS} = 10V, V _{DD} = 60V, R _G = 3Ω, I _D = 10A	-	10.8	-	ns
Rise Time		t _r		-	5.2	-	
Turn-Off Delay Time		t _{d(off)}		-	32.6	-	
Fall Time		t _f		-	5.8	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V _{SD}	I _S = 10A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	T _C =25°C	I _S	-	-	-	15	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
2. The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=10A$.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

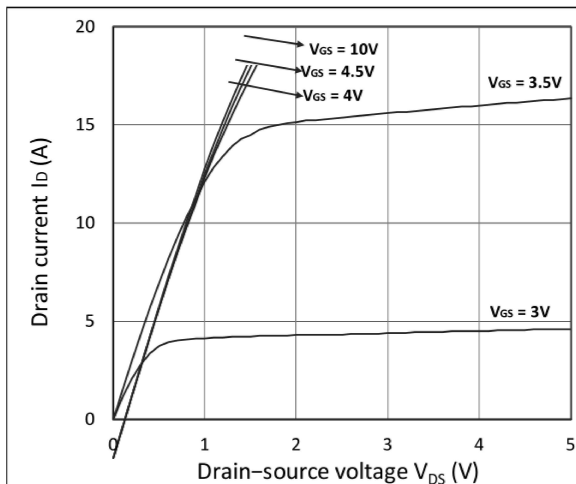


Figure 1. Output Characteristics

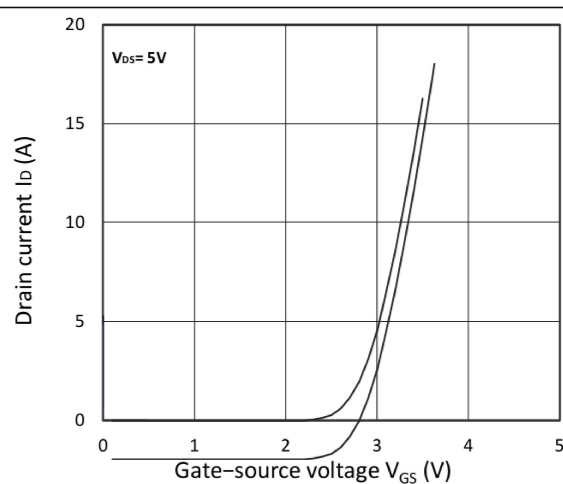


Figure 2. Transfer Characteristics

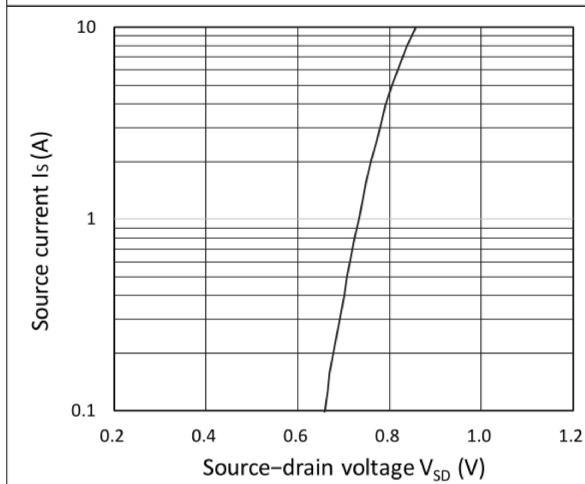


Figure 3. Forward Characteristics of Reverse

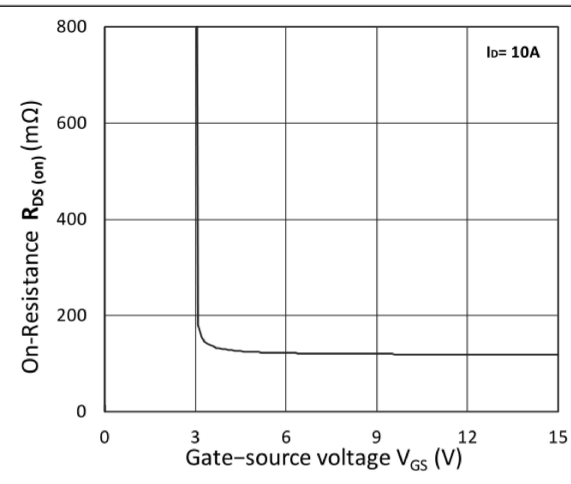


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

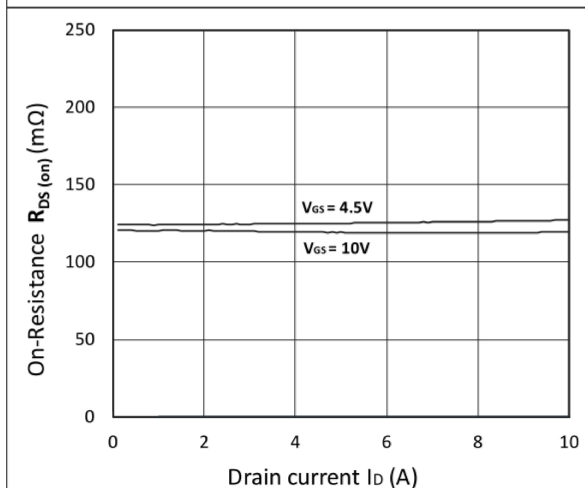


Figure 5. $R_{DS(ON)}$ vs. I_D

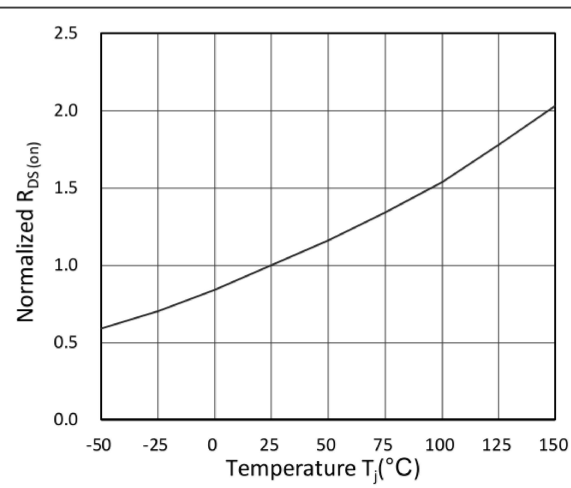


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

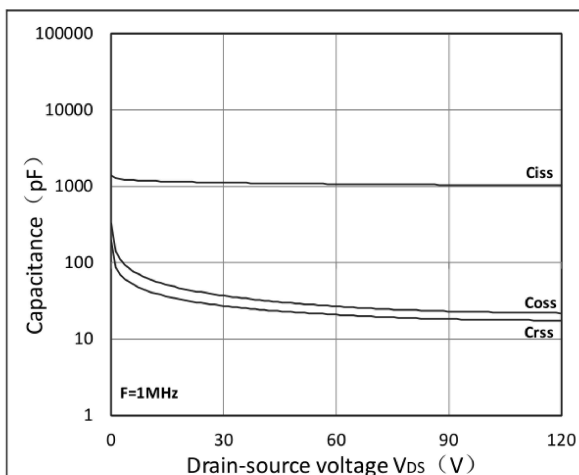


Figure 7. Capacitance Characteristics

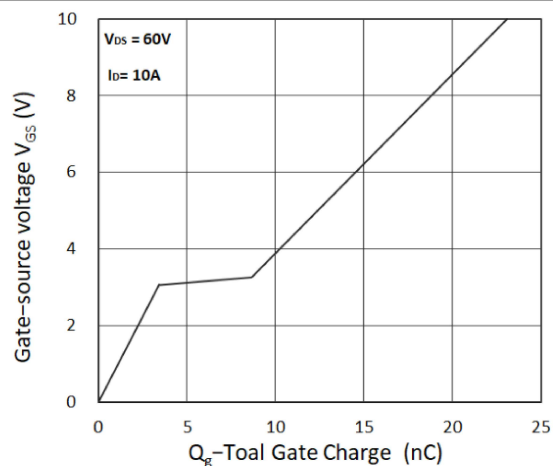


Figure 8. Gate Charge Characteristics

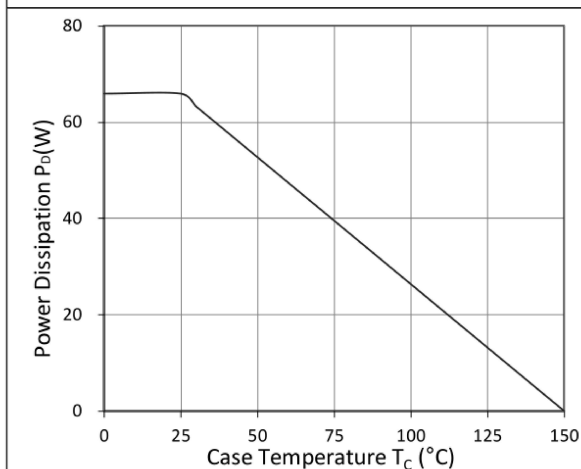


Figure 9. Power Dissipation

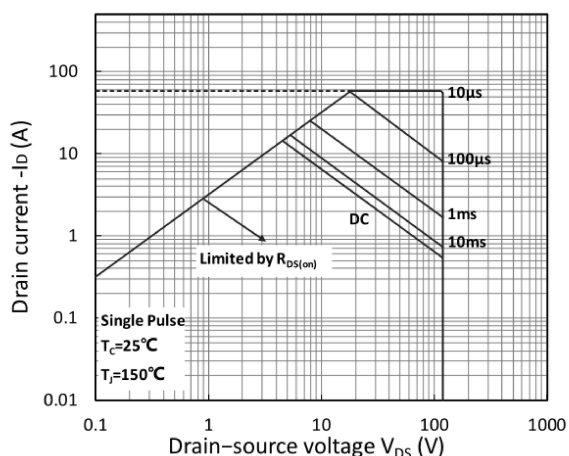


Figure10. Safe Operating Area

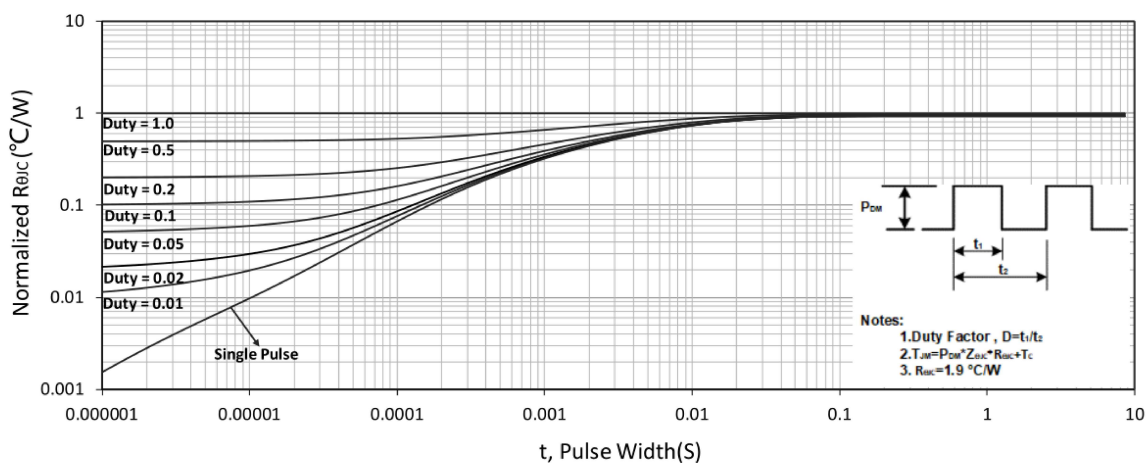
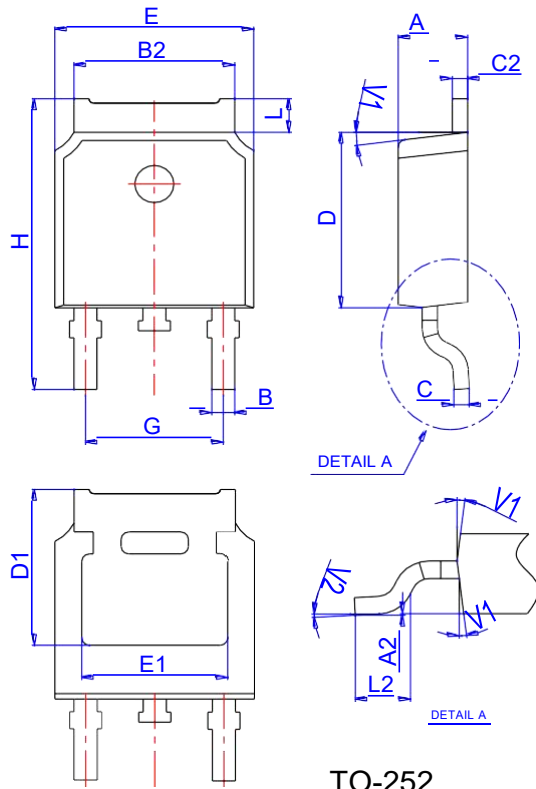


Figure 11. Normalized Maximum Transient Thermal Impedance

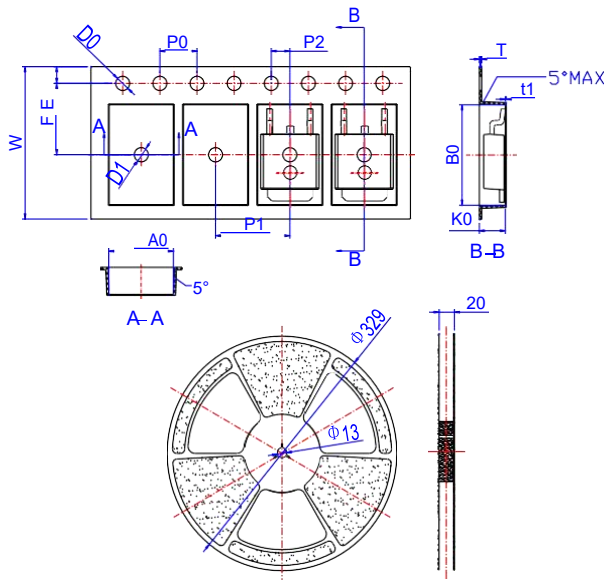
Package Mechanical Data-TO-252-JQ Single



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