

General Description

The MY2N10BF is the high cell density trenched N-CH MOSFET, which provides excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load switch applications.

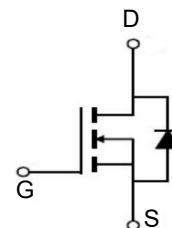
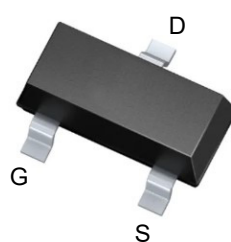


Features

V_{DSS}	100	V
I_D	2.3	A
$R_{DS(ON)}$ (at $V_{GS} = 10V$)	200	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	230	$m\Omega$

Application

- Battery protection
- Load switch
- Power management



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY2N10BF	SOT-23	2N10	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_{D@T_A=25^\circ\text{C}}$	Continuous Drain Current, $V_{GS} @ 10V^1$	2.3	A
$I_{D@T_A=70^\circ\text{C}}$	Continuous Drain Current, $V_{GS} @ 10V^1$	1.2	A
I_{DM}	Pulsed Drain Current ²	5	A
$P_{D@T_A=25^\circ\text{C}}$	Total Power Dissipation ³	1	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(steady state) ¹	125	$^\circ\text{C/W}$
	Thermal Resistance Junction-ambient($t < 10s$) ¹	80	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250μA	100	-	-	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Drain Cut-off Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V	-	-	1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	1.1	1.5	2.5	V
Drain-Source on-state Resistance ³	R _{DS(on)}	V _{GS} = 10V, I _D = 2A	-	200	280	mΩ
		V _{GS} = 4.5V, I _D = 1.5A	-	230	310	
Dynamic Characteristics⁴						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	440	-	pF
Output Capacitance	C _{oss}		-	14	-	
Reverse Transfer Capacitance	C _{rss}		-	10	-	
Switching Characteristics⁴						
Total gate charge	Q _g	V _{GS} = 10V, V _{DS} = 50V, I _D = 2A	-	5.3	-	nC
Gate-source charge	Q _{gs}		-	1.4	-	
Gate-drain charge	Q _{gd}		-	1.8	-	
Turn-on Time	t _{d(on)}	V _{GS} = 10V, V _{DD} = 50V, R _G = 1Ω, I _D = 2A	-	14	-	ns
Rise time	t _r		-	54	-	
Turn-off Time	t _{d(off)}		-	18	-	
Fall time	t _f		-	11	-	
Source-Drain Diode characteristics						
Body Diode Voltage ³	V _{SD}	I _S = 1A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	I _S		-	-	2	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C.
2. 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.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics

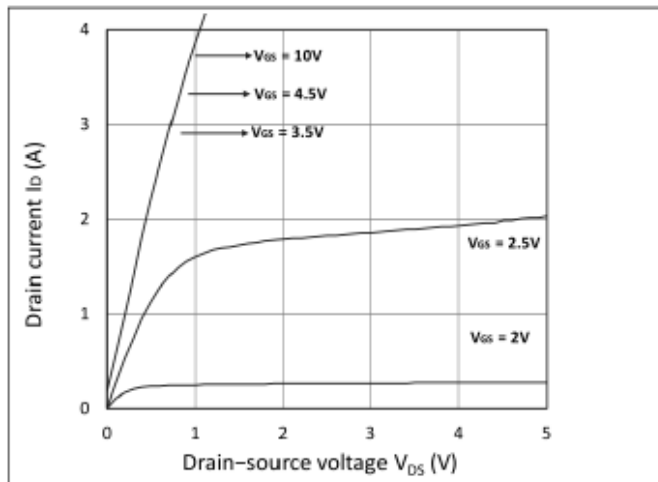


Figure 1. Output Characteristics

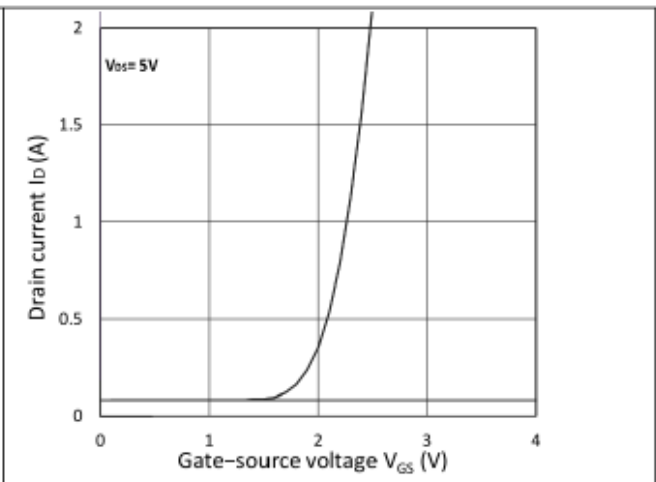


Figure 2. Transfer Characteristics

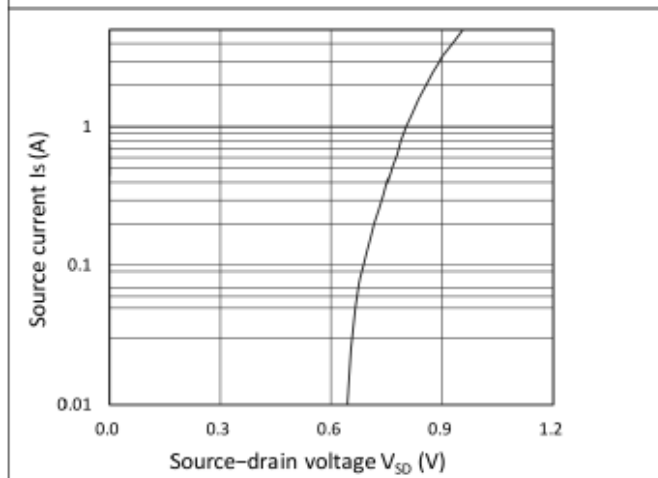


Figure 3. Forward Characteristics of Reverse

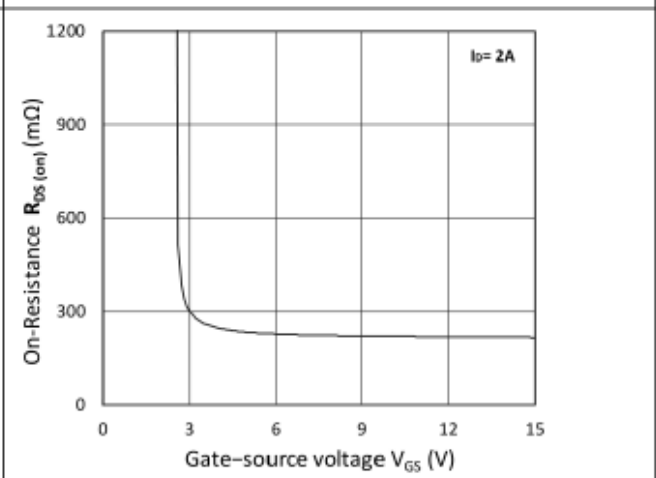


Figure 4. $R_{DS(on)}$ vs. V_{GS}

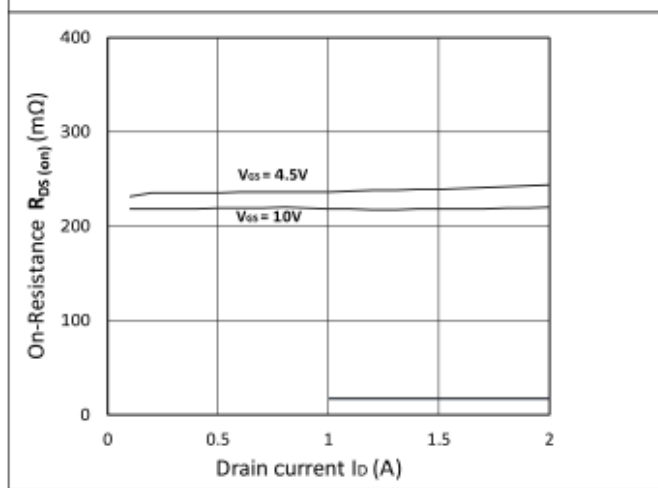


Figure 5. $R_{DS(on)}$ vs. I_D

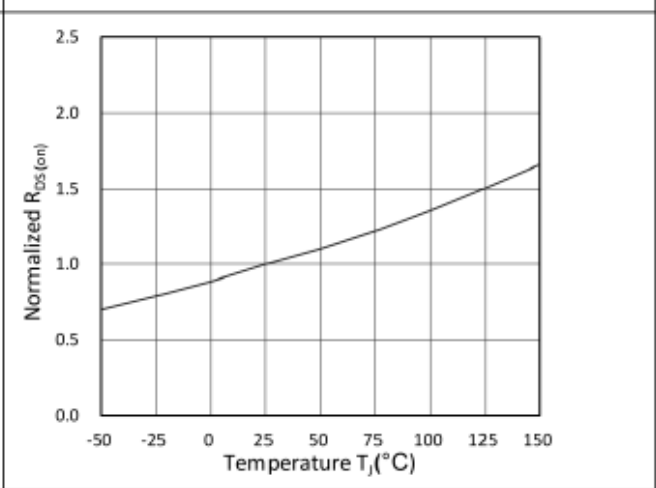


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

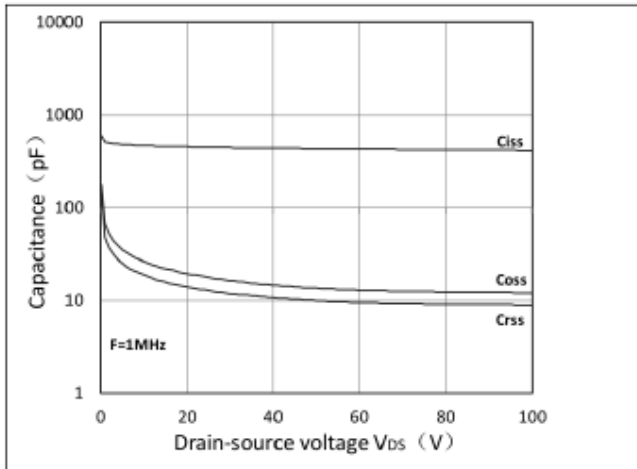


Figure 7. Capacitance Characteristics

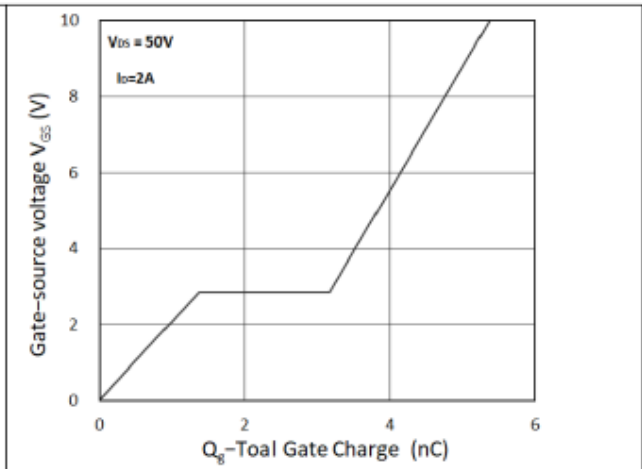
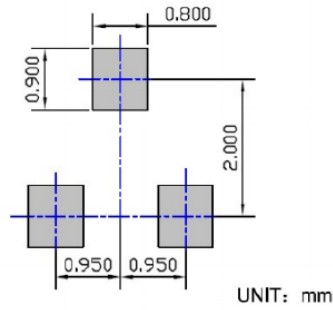
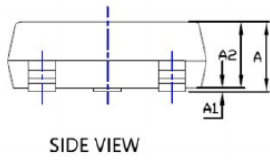
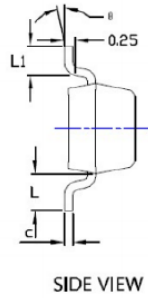
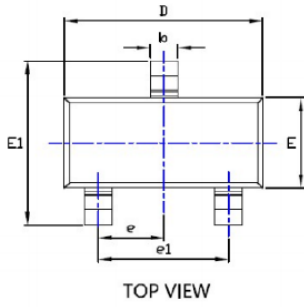


Figure 8. Gate Charge Characteristics

Package Mechanical Data-SOT-23



SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.035	---	0.045	0.900	---	1.150
A1	0.000	---	0.004	0.000	---	0.100
A2	0.035	0.038	0.041	0.900	0.975	1.050
b	0.012	0.016	0.020	0.300	0.400	0.500
c	0.004	---	0.006	0.100	---	0.200
D	0.110	0.114	0.118	2.800	2.900	3.000
E	0.047	0.051	0.055	1.200	1.300	1.400
E1	0.089	0.094	0.100	2.250	2.400	2.550
e	0.037 TYP			0.950 TYP		
e1	0.071	0.075	0.079	1.800	1.900	2.000
L	0.022 REF			0.550 REF		
L1	0.012	0.016	0.200	0.300	0.400	0.500
°	0°	---	8°	0°	---	8°

NOTE:
 1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
 3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.