

General Description

The MY3P10BF is the high cell density trench P-CH MOSFET, which provide excellent $R_{DS(ON)}$ and efficiency for most of the small power switching and load switch applications.

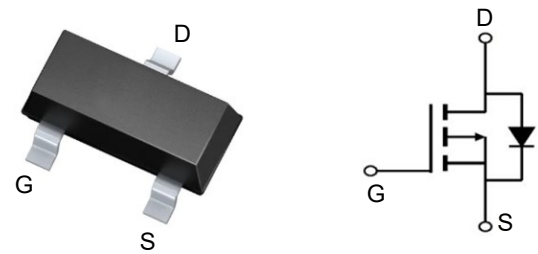


Features

V_{DSS}	-100	V
I_D	-2.9	A
$R_{DS(ON)}$ (at $V_{GS} = -10V$)	0.54	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	0.57	$m\Omega$

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY3P10BF	SOT-23	3P10	3000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-100	V
VGS	Gate-Source Voltage	+20	V
$I_{D@T_A=25^\circ\text{C}}$	Drain Current ³ , V_{GS} @ 10V	-2.9	A
$I_{D@T_A=70^\circ\text{C}}$	Drain Current ³ , V_{GS} @ 10V	-2.7	A
IDM	Pulsed Drain Current ¹	-1.8	A
$P_{D@T_A=25^\circ\text{C}}$	Total Power Dissipation	1	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
Rthj-c	Maximum Thermal Resistance, Junction- case	80	$^\circ\text{C/W}$
Rthj-a	Maximum Thermal Resistance, Junction- ambient ³	125	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-100	---	---	V
ΔBVDSS/ΔT _J	BVDSS Temperature Coefficient	Reference to 25 °C, I _D =-1mA	---	-0.0624	---	V/°C
RDS(ON)	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-0.8A	---	0.54	0.65	Ω
		V _{GS} =-4.5V, I _D =-0.4A	---	0.57	0.7	
VGS(th)	Gate Threshold Voltage		-1.0	-1.5	-2.5	V
ΔVGS(th)	VGS(th) Temperature Coefficient	V _{GS} =V _{DS} , I _D =-250μA	---	4.5	---	mV/°C
IDSS	Drain-Source Leakage Current	V _{DS} =-80V, V _{GS} =0V, T _J =25 °C	---	---	10	μA
		V _{DS} =-80V, V _{GS} =0V, T _J =55 °C	---	---	100	
IGSS	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
gfs	Forward Transconductance	V _{DS} =-5V, I _D =-0.8A	---	3	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	16	32	Ω
Q _g	Total Gate Charge (-4.5V)		---	4.5	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-0.5A	---	1.14	---	
Q _{gd}	Gate-Drain Charge		---	1.5	---	
Td(on)	Turn-On Delay Time		---	13.6	---	ns
T _r	Rise Time	V _{DD} =-50V, V _{GS} =-10V, R _G =3.3Ω	---	6.8	---	
Td(off)	Turn-Off Delay Time	I _D =-0.5A	---	34	---	
T _f	Fall Time		---	3	---	
Ciss	Input Capacitance		---	445.5	---	pF
Coss	Output Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	22.7	---	
Crss	Reverse Transfer Capacitance		---	20	---	
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	-0.9	A
I _{SM}	Pulsed Source Current ^{2,4}		---	---	-1.8	A
VSD	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25 °C	---	---	-1.2	V

Note :

1. The data tested by surface mounted on a 1 inch²FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
3. The power dissipation is limited by 150 °C junction temperature
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Switching Time Test Circuit and Waveforms

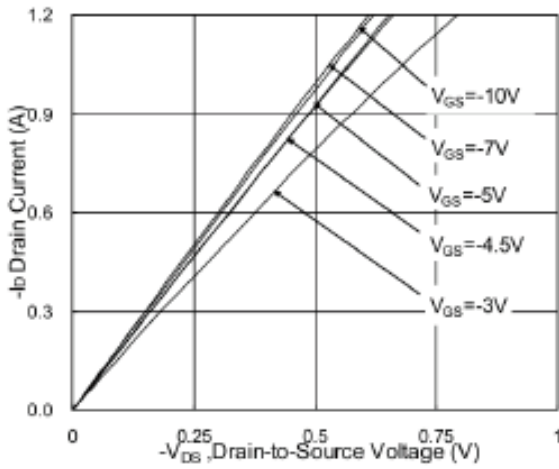


Fig.1 Typical Output Characteristics

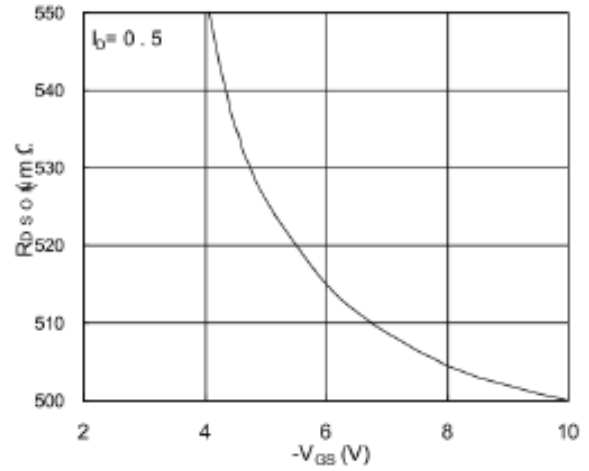


Fig.2 On-Resistance vs. Gate-Source

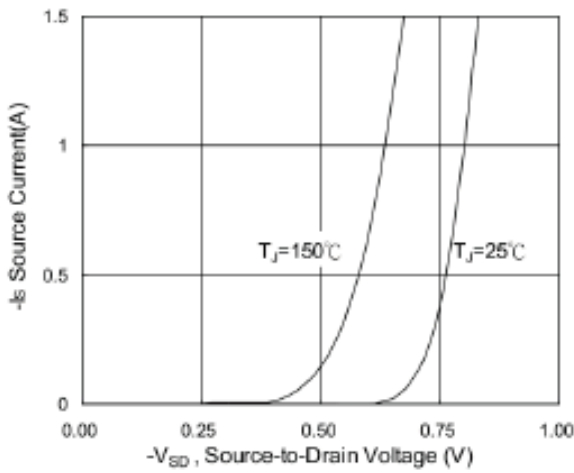


Fig.3 Forward Characteristics Of Reverse

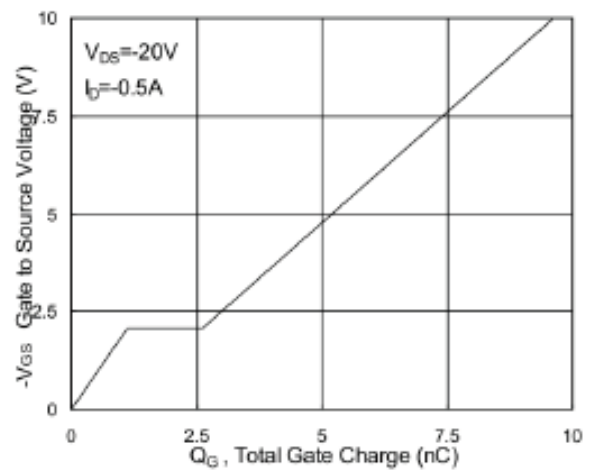


Fig.4 Gate-Charge Characteristics

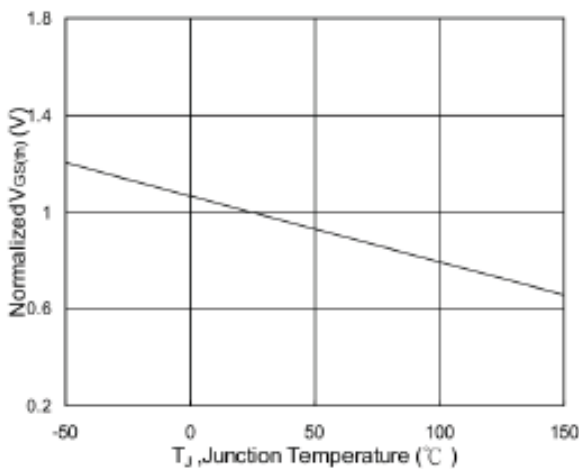


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

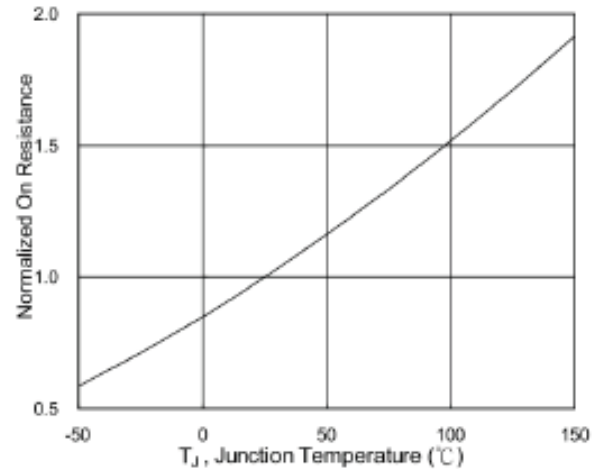


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

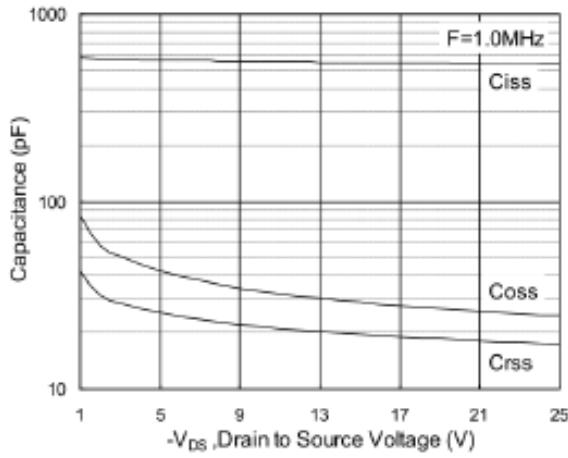


Fig.7 Capacitance

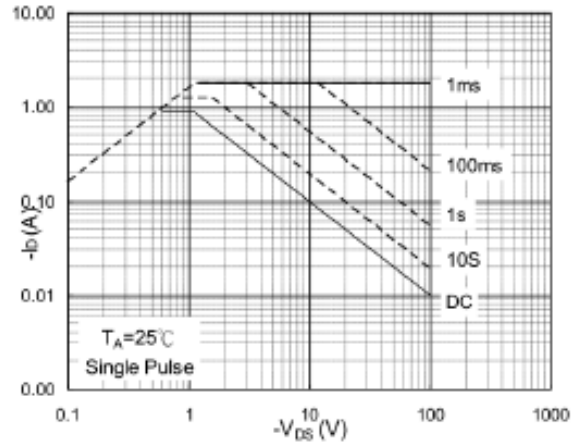


Fig.8 Safe Operating Area

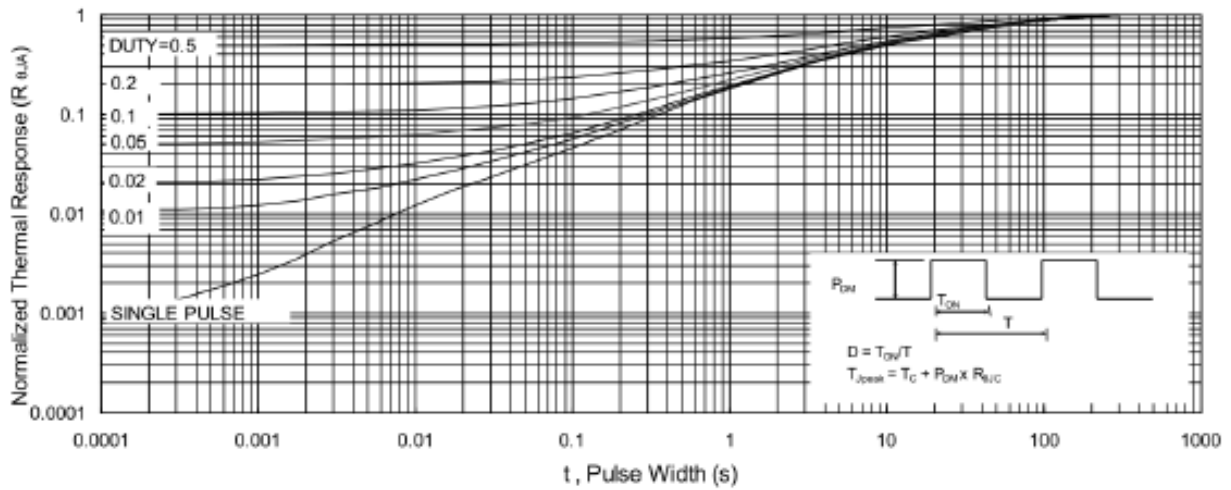


Fig.9 Normalized Maximum Transient Thermal Impedance

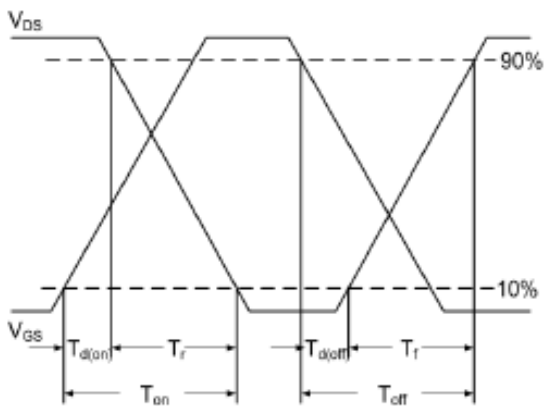


Fig.10 Switching Time Waveform

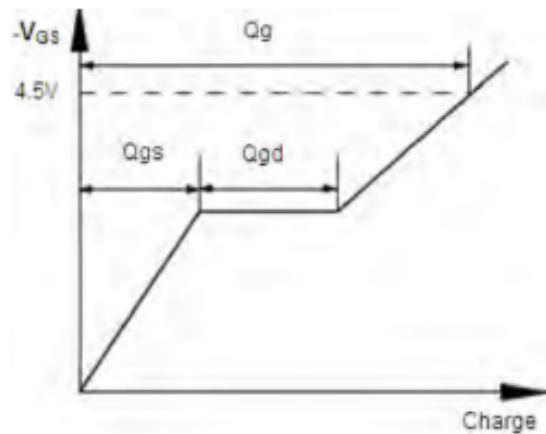
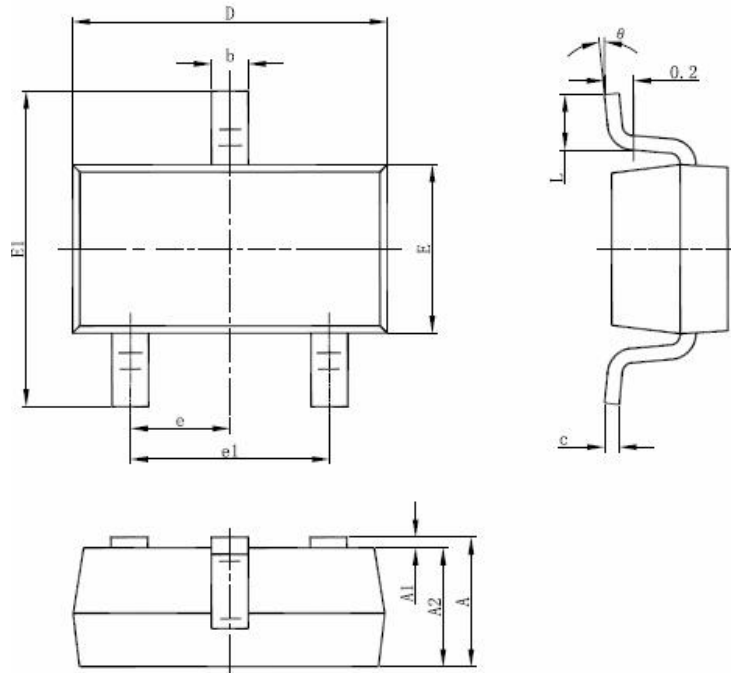


Fig.11 Gate Charge Waveform

Package Mechanical Data-SOT-23



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°