

General Description

The MY20N06F uses advanced trench technology and design to provide excellent RDS(ON) with low gate Charge. It can be used in a wide variety of applications.

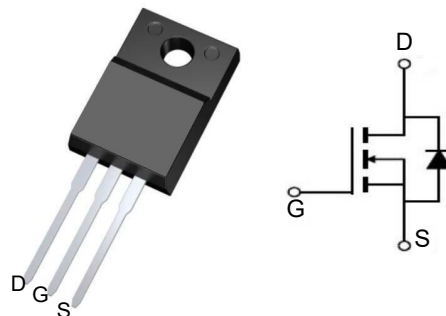


Features

V_{DS}	60	V
I_D	20	A
$R_{DS(ON)}(at V_{GS} = 10V)$	30	m Ω
$R_{DS(ON)}(at V_{GS} = 4.5V)$	38	m Ω

Application

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



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY20N06F	TO-220F	MY20N06F	1000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	60	V
V_{GS}	Gate Source Voltage	± 20	V
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current ¹	20	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current ¹	13	A
I_{DM}	Pulsed Drain Current ³	80	A
E_{AS}, E_{AR}	Avalanche Energy ⁵	7	mJ
I_{AS}, I_{AR}	Avalanche Current ⁵	12	A
$P_D @ T_C = 25^\circ\text{C}$	Total Power Dissipation ⁴	29	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction- to- Case ²	4.7	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ²	62	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=100\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=10A$	---	30	36	m Ω
		$V_{GS}=4.5V, I_D=10A$	---	38	43	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	2	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	uA
		$V_{DS}=48V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=10A$	---	7	---	S
Q_g	Total Gate Charge	$V_{DS}=30V, V_{GS}=10V, I_D=20A$	---	16.6	24	nC
Q_{gs}	Gate-Source Charge		---	2.2	4.4	
Q_{gd}	Gate-Drain Charge		---	3.9	8	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V, I_{DS}=1A$, $V_{GEN}=10V, R_G=6\Omega$	---	4.8	9	nS
T_r	Rise Time		---	14.5	28	
$T_{d(off)}$	Turn-Off Delay Time		---	27	52	
T_f	Fall Time		---	7.5	15	
C_{iss}	Input Capacitance	$V_{DS}=30V, V_{GS}=0V, f=1\text{MHz}$	---	882	1460	pF
C_{oss}	Output Capacitance		---	58	90	
C_{rss}	Reverse Transfer Capacitance		---	35	70	

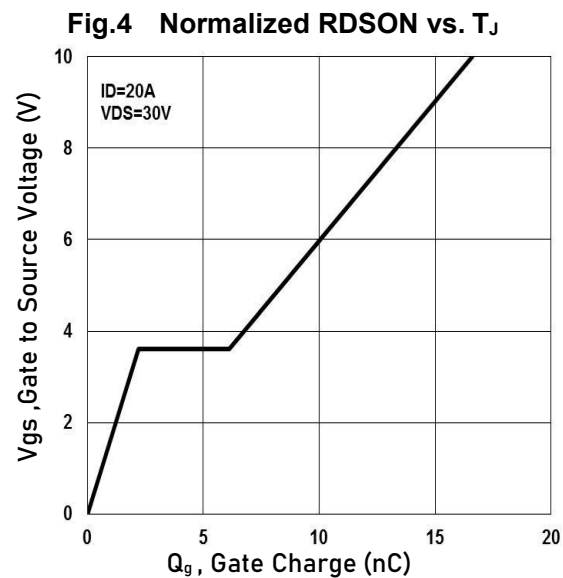
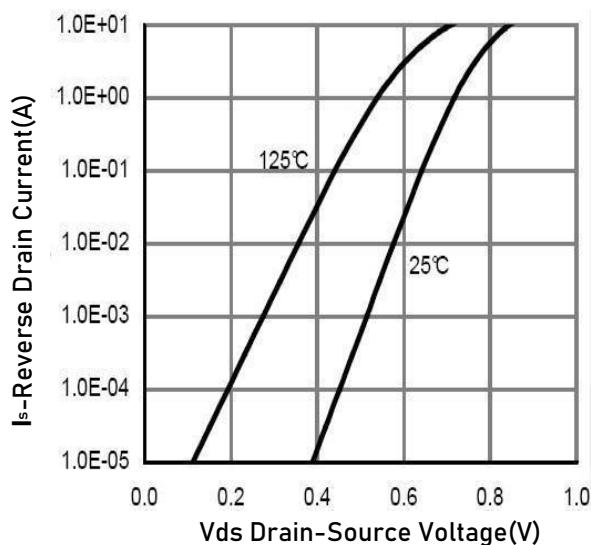
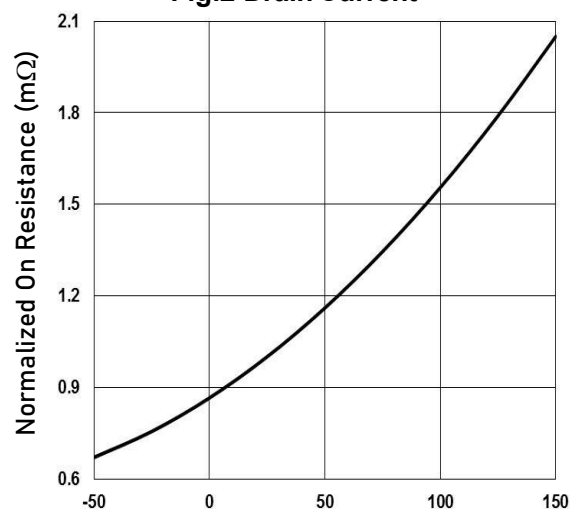
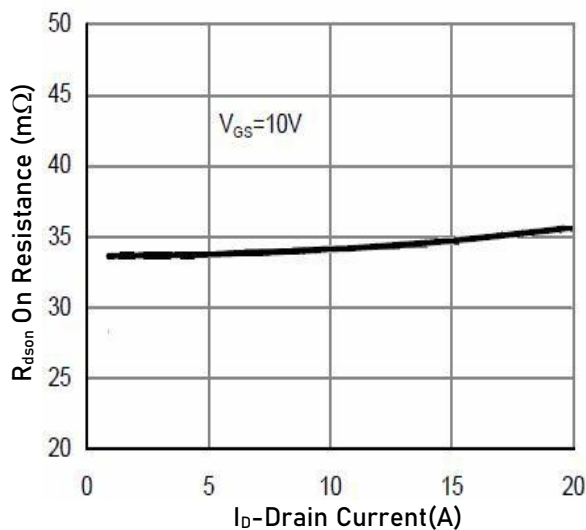
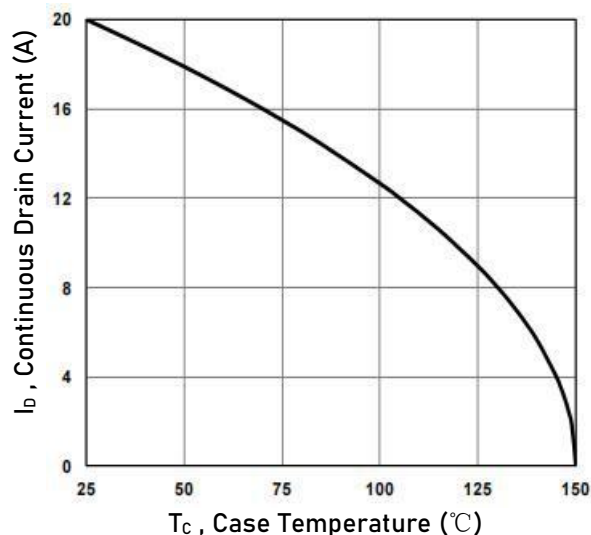
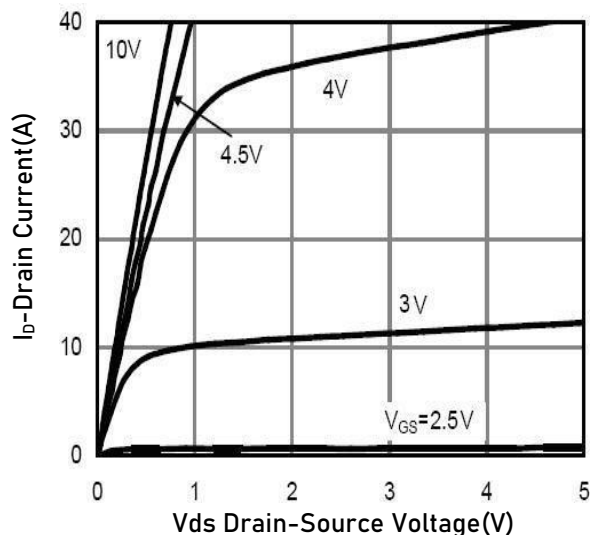
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,4}	$V_G=V_D=0V$	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_{SD}=10A, T_J=25^\circ\text{C}$	---	---	0.8	V
T_{rr}	Reverse Recovery Time	$I_S=1A, V_{GS}=0V,$ $di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	17	---	nS
Q_{rr}	Reverse Recovery Charge		---	12	---	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
4. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.
5. The EAS test condition is $V_{DD}=30V, V_{GS}=10V, L=0.1mH, I_{AS}=12A$

Ratings and Characteristic curves



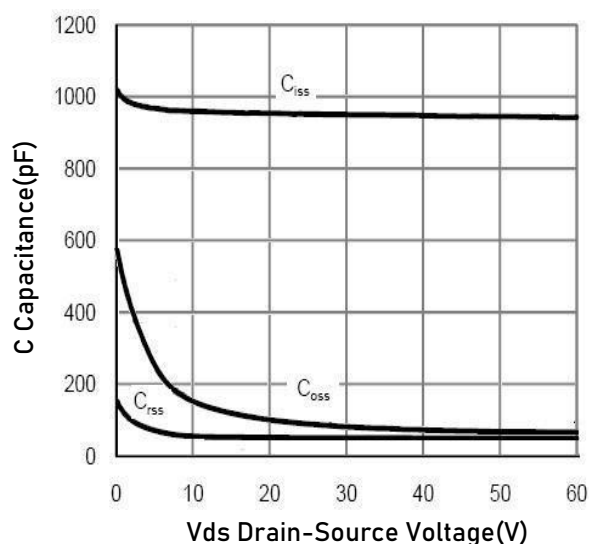


Fig.7 Capacitance

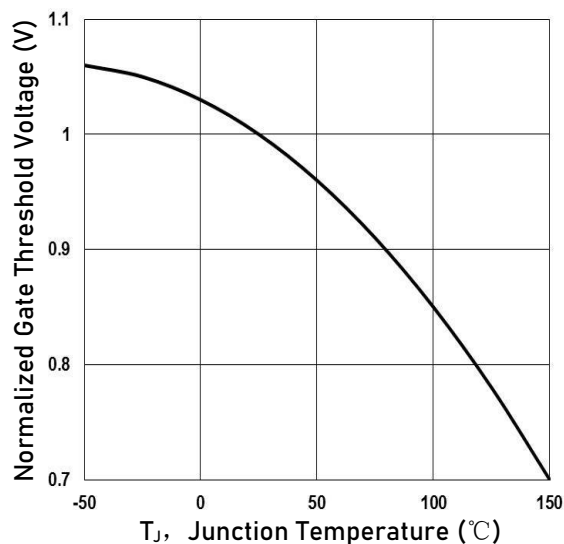


Fig.8 Normalized Vth vs. TJ

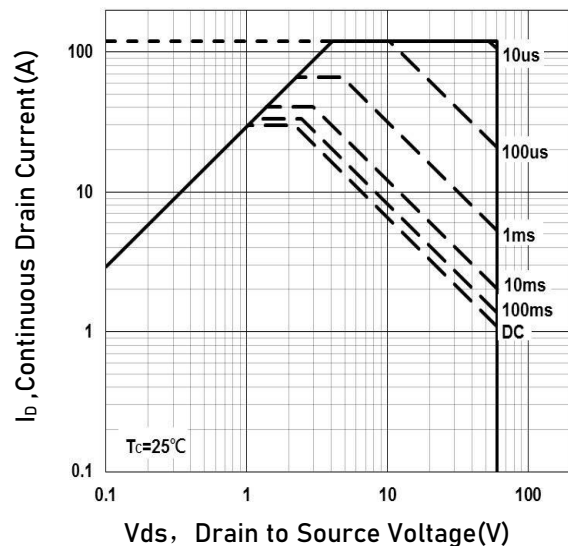


Fig.9 Safe Operating Area

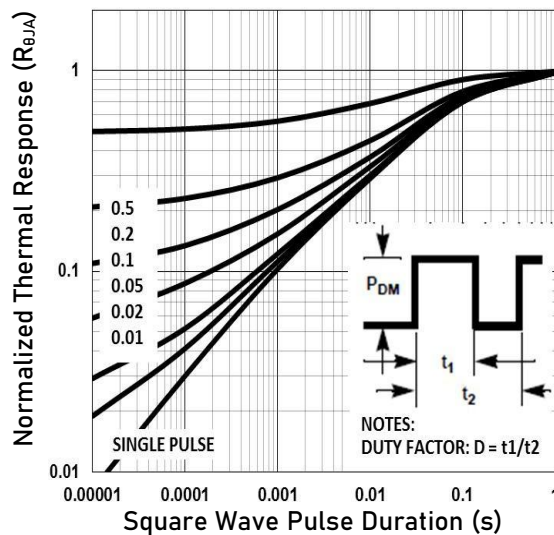
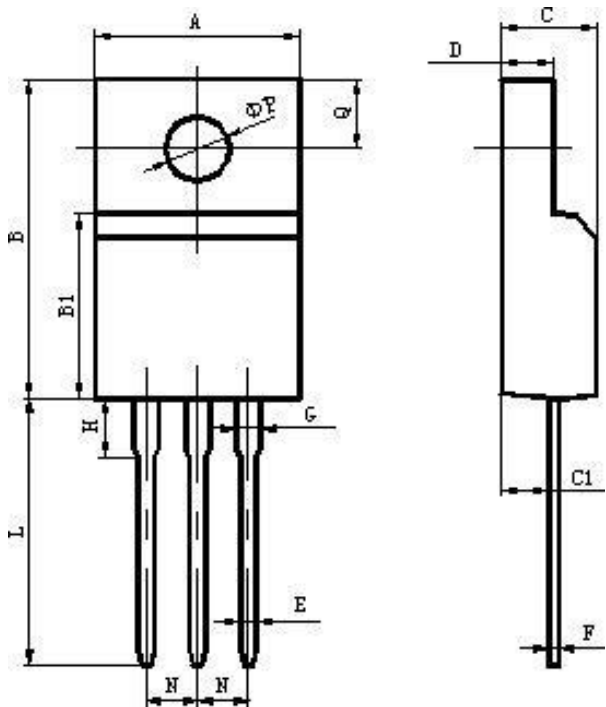


Fig.10 Transient Thermal Impedance

Package Mechanical Data-TO-220F Single



Items	Values(mm)	
	MIN	MAX
A	9.60	10.4
B	15.4	16.2
B1	8.90	9.50
C	4.30	4.90
C1	2.10	3.00
D	2.40	3.00
E	0.60	1.00
F	0.30	0.60
G	1.12	1.42
H	3.40	3.80
	2.40	2.90
L*	12.0	14.0
N	2.34	2.74
Q	3.15	3.55
Φ P	2.90	3.30