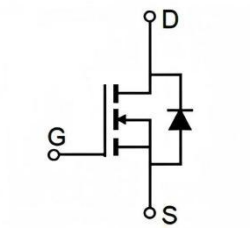
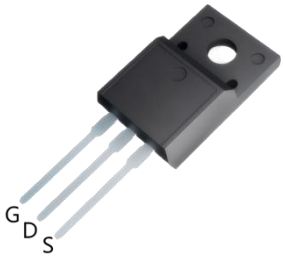
N-Channel Super Junction MOSFET

Parameter	Value	Unit
V_{DS}	650	V
$R_{DS(on)}$	340	mΩ
I_D	11	A





TO-220F

Features

- Super Junction technology
- Ultra low RDS(on)
- Ultra low gate charge
- 100% UIS tested

Applications

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS）
- Power Factor Correction(PFC)

Absolute Maximum Ratings(T_C=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	I_D	11	A
Pulsed Drain Current (Note1)	I_{DM}	44	A
Power Dissipation	P_D	30	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	270	mJ
Operating Temperature Range	T_J	-50 to +150	℃
Storage Temperature Range	T_{STG}	-50 to +150	℃
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.2	℃/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62	℃/W

Note1:Pulse test: 300μs pulse width, 2% duty cycle

Electrical Characteristics(TJ=25℃,unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=250μA	650	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	V_{GS}= ±30V, V_{DS}=0V	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.5	-	4.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=5.5A	-	340	380	mΩ
Input Capacitance	C_{iss}	V_{DS}=100V, V_{GS}=0V, f=250KHz	-	900	-	pF
Output Capacitance	C_{oss}		-	37.4	-	pF
Reverse Transfer Capacitance	C_{rss}		-	0.46	-	pF
Turn-on Delay Time(Note2)	$t_{d(ON)}$	V_{DD}=400V, I_D=5.5A, V_{GS}=10V, R_G=10Ω	-	46.8	-	ns
Rise Time(Note2)	t_r		-	10.6	-	ns
Turn-Off Delay Time(Note2)	$t_{d(OFF)}$		-	40.2	-	ns
Fall Time(Note2)	t_f		-	7	-	ns
Total Gate Charge(Note2)	Q_G	V_{DS}= 520V, V_{GS}=10V, I_D=5.5A	-	4.6	-	nC
Gate to Source Charge(Note2)	Q_{GS}		-	8.5	-	nC
Gate to Drain Charge(Note2)	Q_{GD}		-	20.6	-	nC
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	11	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	44	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=5.5A , T_J=25℃	-	-	1.2	V
Reverse recovery time	tr_r	V_{DD}=400V,T_J=25℃,I_F=5.5A, di/ dt=100A/μs	-	240	-	ns
Reverse recovery charge	Q_{rr}			1962		uC

Note2:Pulse test: 300μs pulse width, 2% duty cycle

Typical Characteristics

Fig 1:Output Characteristics

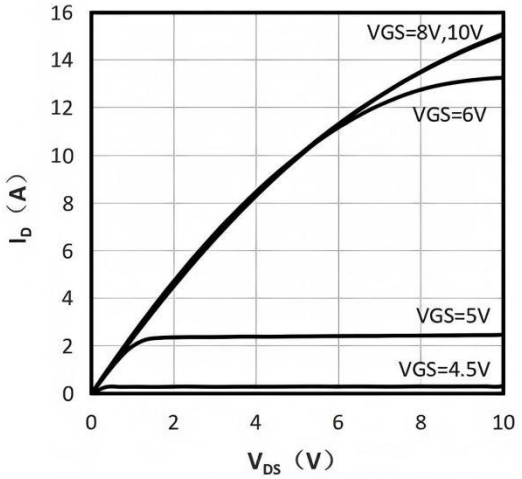


Fig 2: Transfer Characteristics

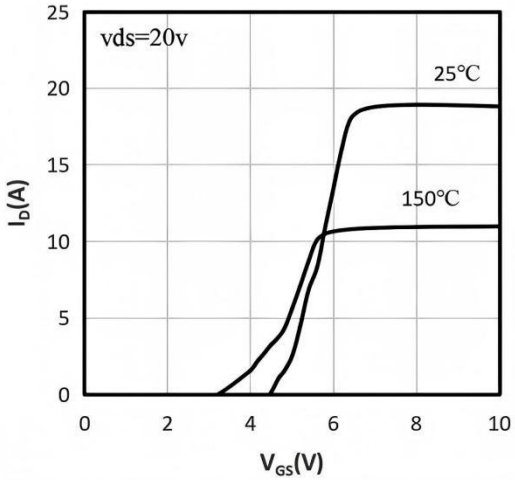


Fig 3: Rds(on) vs Drain Current and Gate Voltage

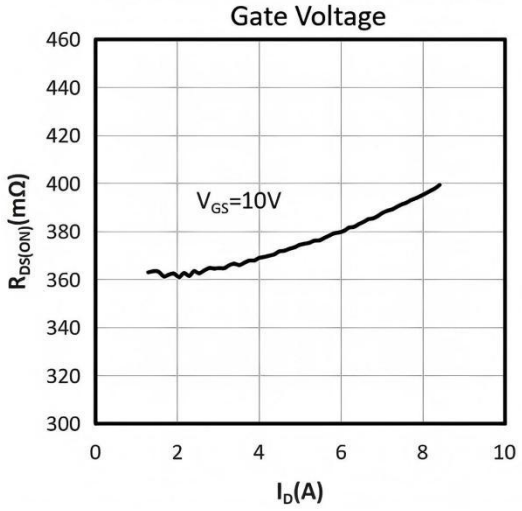


Fig 4: Rds(on)vs. Temperature

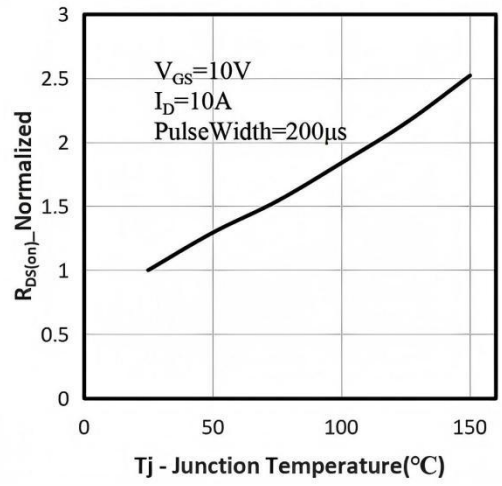


Fig 5: Breakdown Voltage vs. Temperature

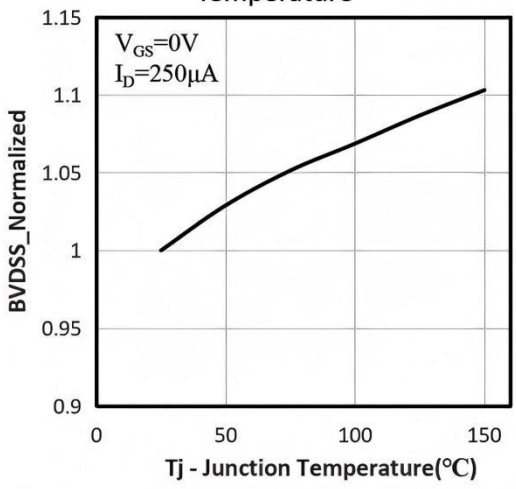


Fig 6: Threshold voltage vs. Temperature

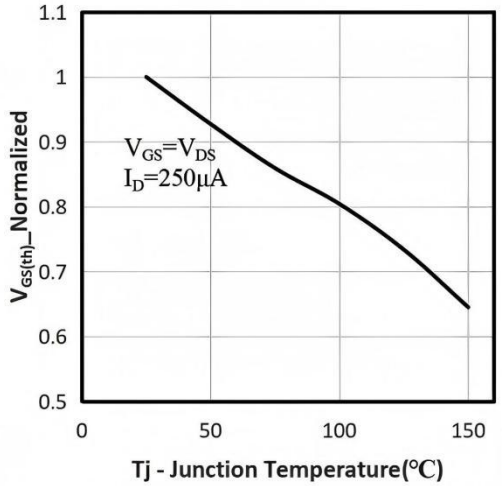


Fig 7: Body-Diode Characteristics

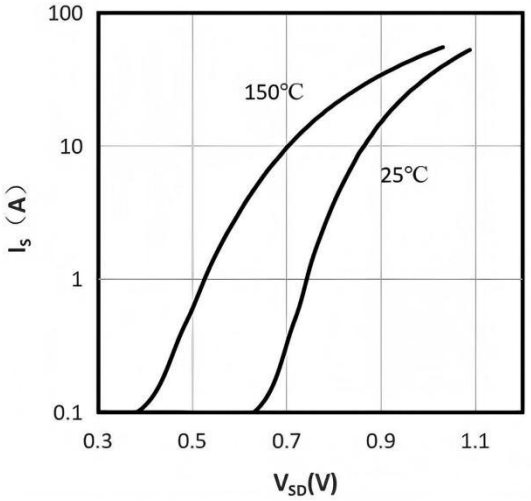


Fig 8: Capatitance Characteristics

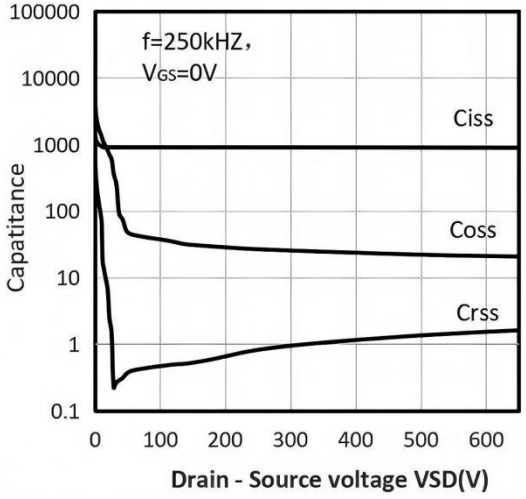


Fig 9: Gate Quantity of electric charger vs. Gate Voltage

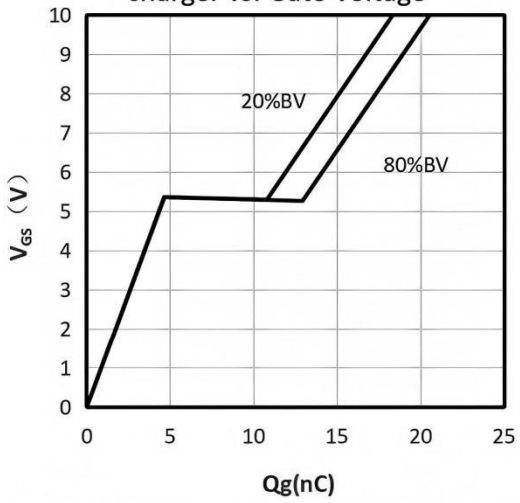


Fig 10: Drain Current Derating

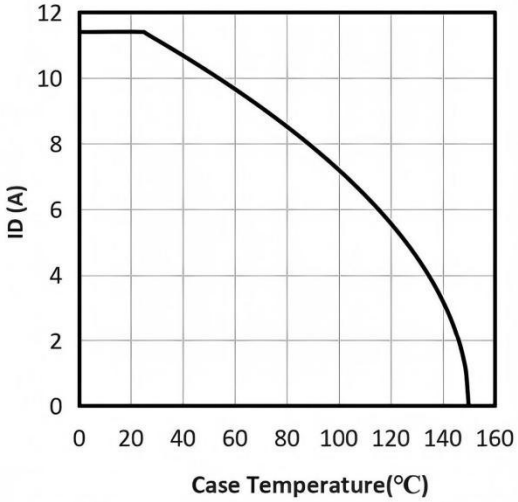


Fig 11: Power Dissipation vs.Temperature

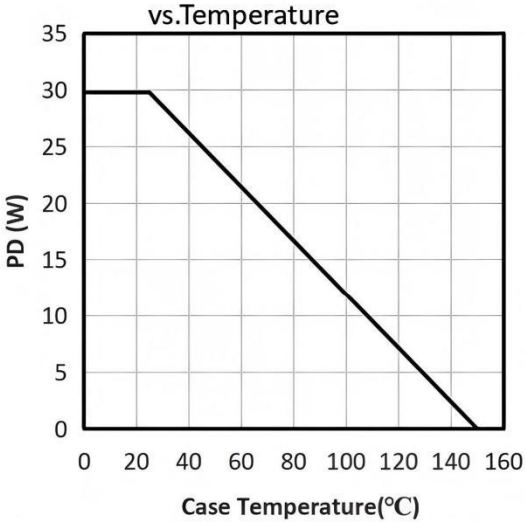
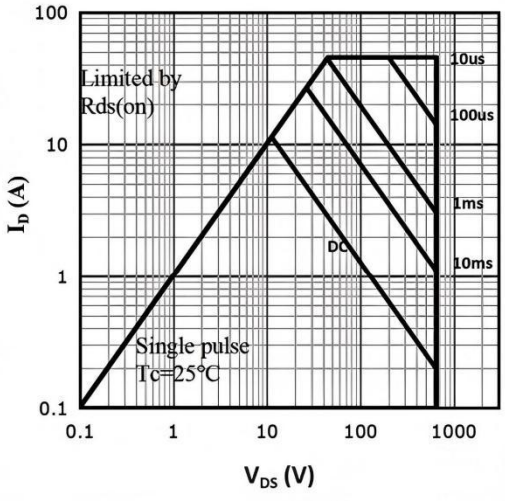
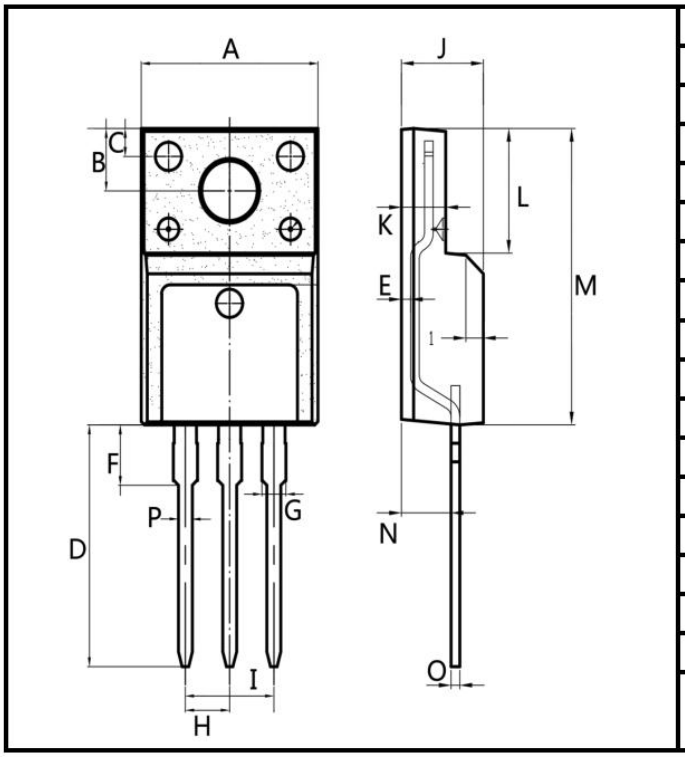


Fig 12: Safe Operating Area



Package Outlines

TO-220F



Dim.	Min.	Max.
A	9.95	10.35
B	2.95	3.25
C	1.25	1.45
D	12.8	13.2
E	0.4	0.6
F	2.8	3.5
G	1.3	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.5	5
K	2.45	2.65
L	6.5	6.8
M	15.4	16
N	2.75	3.05
O	0.45	0.55
P	0.7	0.9
All Dimensions in millimeter		

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