

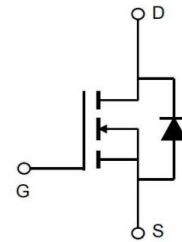
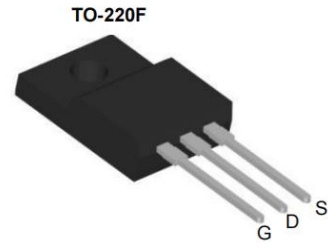
Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$
650V	$< 1050\text{m}\Omega @ V_{GS}=10\text{V}$	10A

Description and Applications

- High Frequency Switching Mode Power Supply
- Active Power Factor Correction
- 100% UIS Tested
- 100% Rg Tested

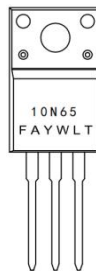
Package & Internal Circuit



Ordering Information

Part Number	Package Type	Package Qty
CFTF10N65	TO-220F	1,000/Tube

Marking Information



Green product

10N65--Part Number
F-Fab location
A-Assembly location
Y--Year
W--Week
LT--Lot sequence

Absolute Maximum Rating ($T_{amb}=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V _{DS}	650	V
Gate-Source Voltage		V _{GS}	±30	V
Drain Current - Continuous	T _c =25°C	I _D	10	A
	T _c =100°C		6	A
Single Pulse Avalanche Energy	L=12.6mH	E _{AS}	693	mJ
Power Dissipation	T _c =25°C	P _D	50	W
	Derate above 25°C		0.4	W/°C
Operating and Storage Temperature Range		T _J ,T _{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$		62.5	°C/W
Maximum Junction-to-Case	$R_{\theta JC}$		2.5	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} =0V	650			V
ΔBV _{DSS} / ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA (Referenced to 25°C)		0.68		V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V			1	μA
		V _{DS} =520V, T _J =125°C			10	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±30V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
R _{DS(ON)}	Drain-Source on-Resistance	V _{GS} =10V, I _D =5A		800	1050	mΩ
g _{FS}	Forward Transconductance	V _{DS} = 20V, I _D =5A		7.2		S
V _{SD}	Body Diode Forward Voltage	I _S = 10A, V _{GS} = 0V			1.4	V
I _S	Maximum Body-Diode Continuous Current				10	A
Dynamic parameters						
C _{iss}	Input Capacitance	V _{GS} =0V V _{DS} =25V f=1.0MHz		1122		pF
C _{oss}	Output Capacitance			130		pF
C _{rss}	Reverse Transfer Capacitance			13.3		pF
Switching Parameters						
Q _g	Total Gate Charge	V _{GS} =10V V _{DS} =520V I _D =10A		39		nC
Q _{gs}	Gate Source Charge			7.4		nC
Q _{gd}	Gate Drain Charge			17.6		nC
t _{D(on)}	Turn-On Delay Time	V _{DS} =325V V _{GS} =10V I _D =10A R _G =3Ω		19.5		ns
t _r	Turn-On Rise Time			95		ns
t _{D(off)}	Turn-Off Delay Time			133		ns
t _f	Turn-Off Fall Time			75		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =10A di/dt =100 A/μs		370		ns
Q _{rr}	Body Diode Reverse Recovery Charge			3.41		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

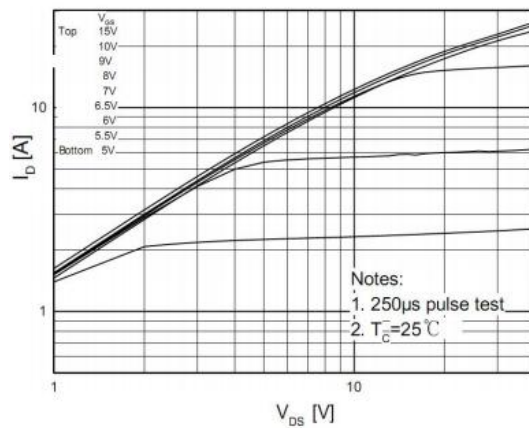


Figure 1: Output Characteristics

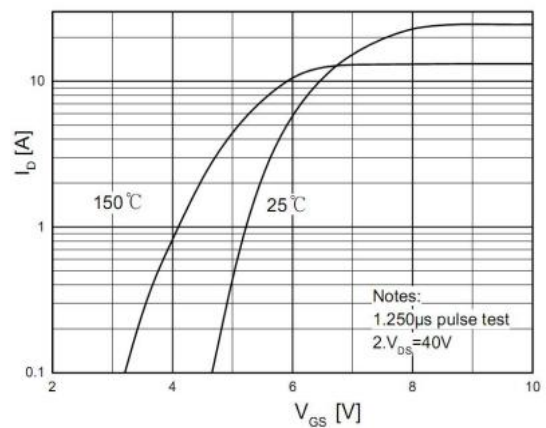


Figure 2: Transfer Characteristics

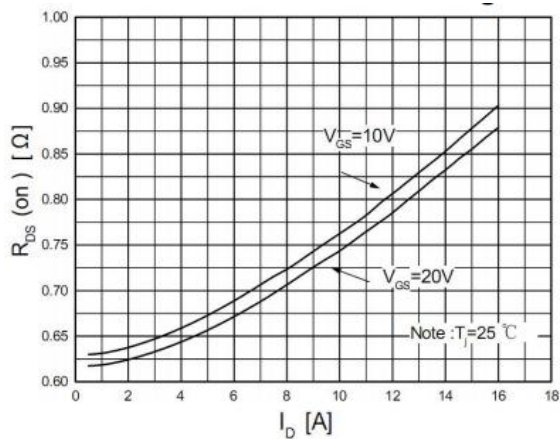


Figure 3: On-Resistance Variation vs Drain Current and Gate Voltage

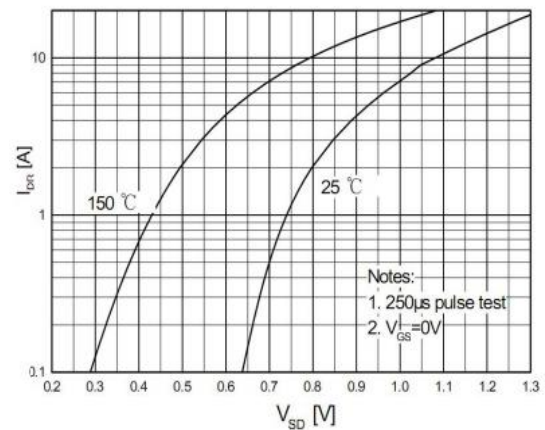


Figure 4: Body Diode Forward Voltage Variation vs. Source Current and Temperature

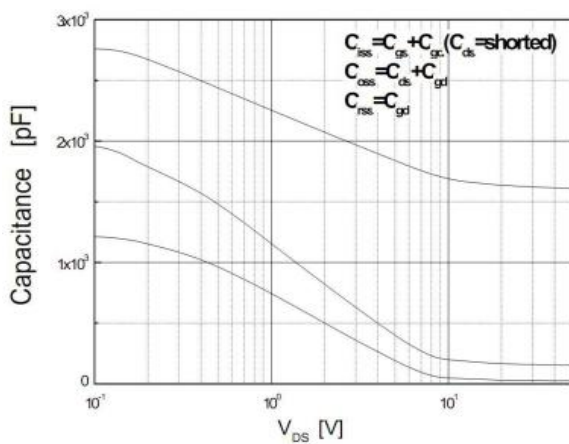


Figure 5: Capacitance Characteristics

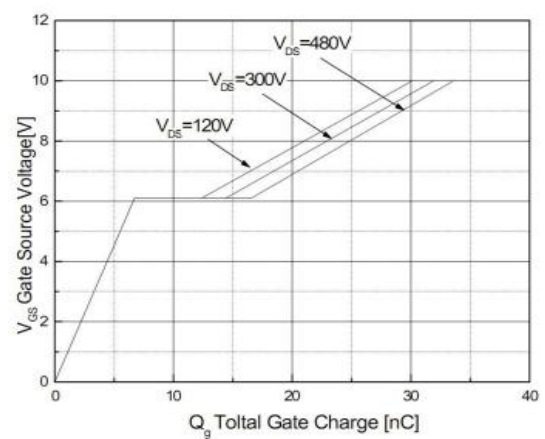


Figure 6: Gate Charge Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

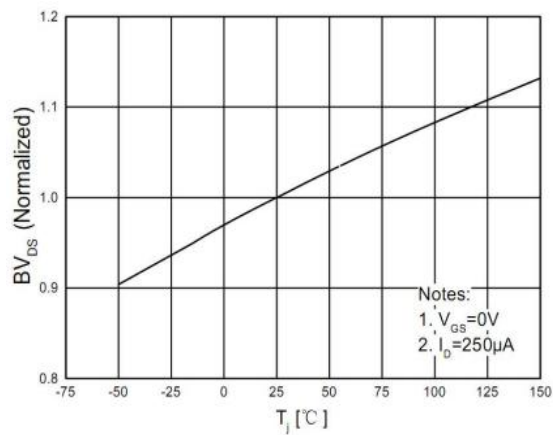


Figure 7: Breakdown Voltage Variation vs. Temperature

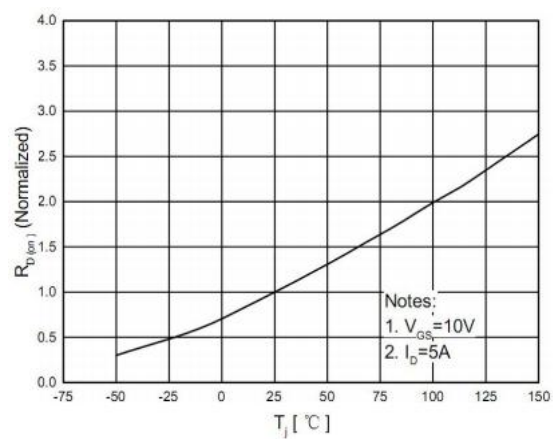


Figure 8: On-Resistance Variation vs. Temperature

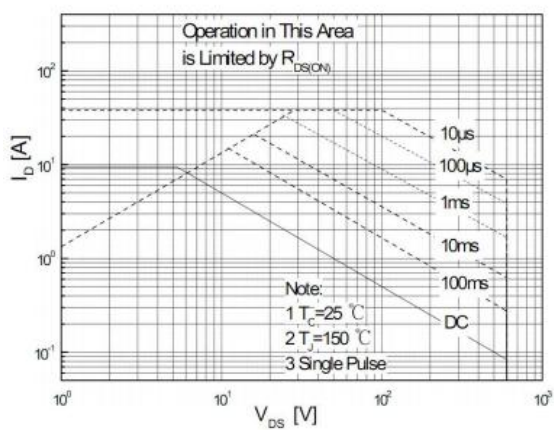


Figure 9: Maximum Safe Operating Area

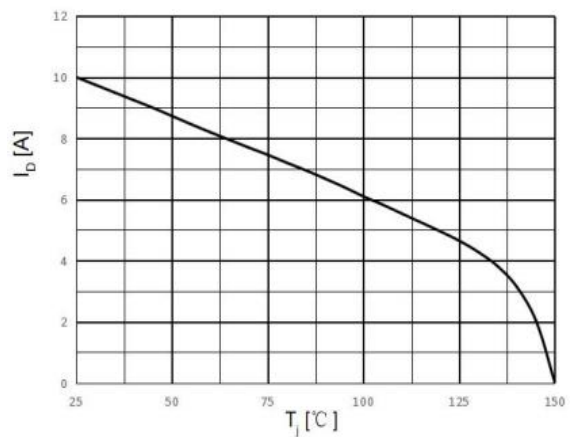
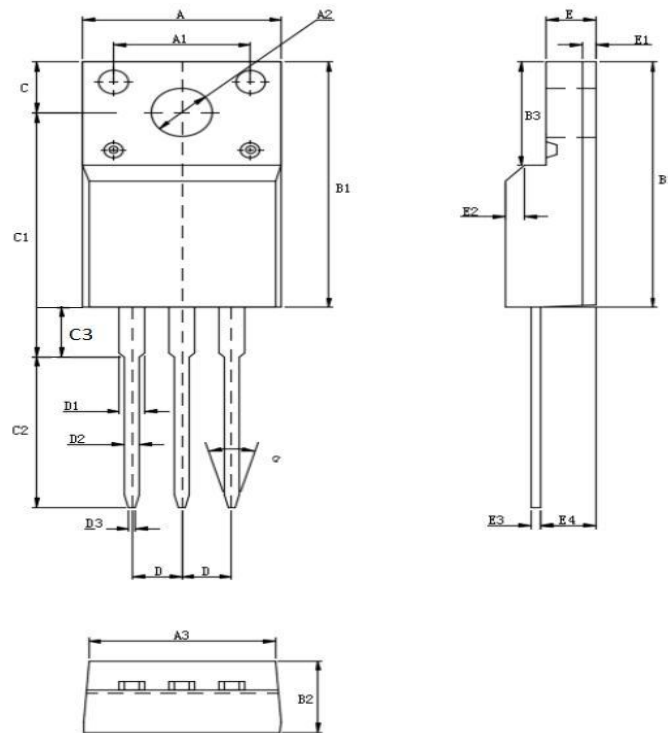


Figure 10: Maximum Drain Current Vs. Case Temperature

TO-220F Package Information



UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	9.80		10.60	D		2.54	
A1		7.00		D1	1.15		1.47
A2	2.90		3.40	D2	0.60		0.90
A3	9.10		9.90	D3	0.20		0.50
B1	15.40		16.40	E	2.24		2.84
B2	4.35		4.95	E1		0.70	
B3	6.00		7.40	E2		1.0×45°	
C	3.00		3.70	E3	0.35		0.65
C1	15.00		17.00	E4	2.30		3.30
C2	8.80		10.80	α (度)		30°	
C3	2.60		3.60				

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