FTP14N50C
FTA14N50C

N-Channel MOSFET

Pb Lead Free Package and Finish

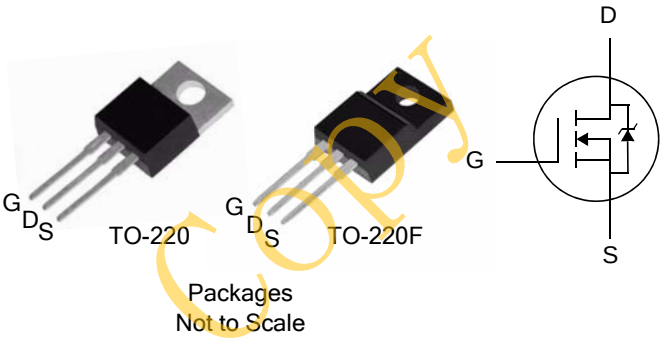
Applications:

- Adaptor
- TV Main Power
- LCD Panel Power

V_{DSS}	$R_{DS(ON)}$ (Max.)	I_D
500V	0.46 Ω	14 A

Features:

- RoHS Compliant
- Low ON Resistance
- Low Gate Charge



Packages
Not to Scale

Ordering Information

PART NUMBER	PACKAGE	BRAND
FTP14N50C	TO-220	FTP14N50C
FTA14N50C	TO-220F	FTA14N50C

Absolute Maximum Ratings T_C=25 °C unless otherwise specified

Symbol	Parameter	FTP14N50C	FTA14N50C	Units
V_{DSS}	Drain-to-Source Voltage (NOTE *1)	500		V
I_D	Continuous Drain Current	14.0	14.0*	A
I_D@ 100 °C	Continuous Drain Current	8.50		
I_{DM}	Pulsed Drain Current, V_{GS}@ 10V (NOTE *2)	56		
P_D	Power Dissipation	188	50	W
	Derating Factor above 25 °C	1.52	0.40	W/ °C
V_{GS}	Gate-to-Source Voltage	± 30		V
E_{AS}	Single Pulse Avalanche Engergy L=1 mH, I_D=21 Amps	225		mJ
I_{AS}	Pulsed Avalanche Rating	Figure 8		A
dv/dt	Peak Diode Recovery dv/dt (NOTE *3)	3.0		V/ns
T_L T_{PKG}	Maximum Temperature for Soldering Leads at 0.063 in (1.6 mm) from Case for 10 seconds Package Body for 10 seconds	300 260		°C
T_J and T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150		

** Drain Current Limited by Maximum Junction Temperature*

Caution: *Stresses greater than those listed in the "Absolute Maximum Ratings" Table may cause permanent damage to the device.*

Thermal Resistance

Symbol	Parameter	FTP14N50C	FTA14N50C	Units	Test Conditions
$R_{\theta JC}$	Junction-to-Case	0.66	2.5	°C/W	Drain lead soldered to water cooled heatsink, P_D adjusted for a peak junction temperature of +150 °C.
$R_{\theta JA}$	Junction-to-Ambient	62	100		1 cubic foot chamber, free air.

OFF Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	500	--	--	V	V_{GS}=0V, I_D=250μA
$\Delta BV_{DSS}/\Delta T_J$	BreakdownVoltage Temperature Coefficient, Figure 11.	--	0.631	--	V/°C	Reference to 25°C, I_D=250μA
I_{DSS}	Drain-to-Source Leakage Current	--	--	25	μA	V_{DS}=500V, V_{GS}=0V
		--	--	250		V_{DS}=400V, V_{GS}=0V T_J=125°C
I_{GSS}	Gate-to-Source Forward Leakage	--	--	100	nA	V_{GS}=+30V
	Gate-to-Source Reverse Leakage	--	--	-100		V_{GS}= -30V

ON Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance Figure 9 and 10.	--	0.4	0.46	Ω	V_{GS}=10V, I_D=7.0A (NOTE *4)
$V_{GS(TH)}$	Gate Threshold Voltage, Figure 12.	2.0	--	4.0	V	V_{DS}=V_{GS}, I_D=250μA
gfs	Forward Transconductance	--	6.8	--	S	V_{DS}=15V, I_D=14A (NOTE *4)

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
C_{iss}	Input Capacitance	--	2129	--	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
C_{oss}	Output Capacitance	--	180	--		
C_{rss}	Reverse Transfer Capacitance	--	18	--		
Q_g	Total Gate Charge	--	41	--	nC	V_{DD}=250V I_D=14A
Q_{gs}	Gate-to-Source Charge	--	11	--		
Q_{gd}	Gate-to-Drain (“Miller”) Charge	--	16	--		

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$t_{d(ON)}$	Turn-on Delay Time	--	16	--	ns	V_{DD}=250V I_D=14A V_{GS}=10V R_G=10Ω
t_{rise}	Rise Time	--	30	--		
$t_{d(OFF)}$	Turn-Off Delay Time	--	52	--		
t_{fall}	Fall Time	--	36	--		

Source-Drain Diode Characteristics T_C=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	--	--	14	A	Integral pn-diode in MOSFET
I_{SM}	Maximum Pulsed Current (Body Diode)	--	--	56	A	
V_{SD}	Diode Forward Voltage	--	--	1.5	V	I_S=14A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	--	345	578	ns	V_{GS}=0V
Q_{rr}	Reverse Recovery Charge	--	2.5	3.8	uC	I_F=14A, di/dt=100 A/μs

Notes:

*1. T_J = +25°C to +150°C.
*2. Repetitive rating; pulse width limited by maximum junction temperature.
*3. I_{SD}= 14 A, di/dt ≤ 100 A/μs, V_{DD} ≤ BV_{DSS}, T_J=+150°C.
*4. Pulse width ≤ 380μs; duty cycle ≤ 2%.

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