

General Description

This Power MOSFET is produced using Cmos's advanced planar stripe DMOS technology. These devices are well suited for high efficiency switched mode power supplies, active power factor correction, electronic lamp ballasts based on half bridge topology.

Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

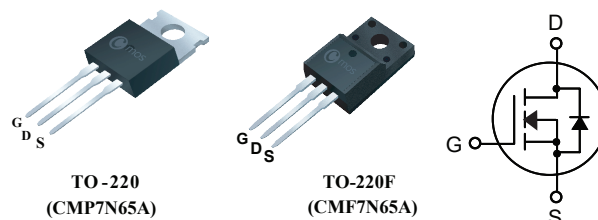
Product Summary

BVDSS	RDSON	ID
650V	1.3Ω	7A

Applications

- Adaptor
- Power Supply
- High Current, High Speed Switching

TO-220/220F Pin Configuration



Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Symbol	Parameter	220	220F	Units
V _{DSS}	Drain-Source Voltage	650		V
I _D	Drain Current - Continuous (T _C = 25°C) - Continuous (T _C = 100°C)	7	7*	A
		4.2	4.2*	A
I _{DM}	Drain Current - Pulsed ¹	28	28*	A
V _{GSS}	Gate-Source Voltage	±30		V
E _{AS}	Single Pulsed Avalanche Energy ²	735		mJ
dv/dt	Peak Diode Recovery dv/dt ³	4.5		V/ns
P _D	Power Dissipation (T _C = 25°C)	160	50	W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150		°C
T _L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300		°C

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	220	220F	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	0.78	2.5	°C/W
R _{θCS}	Thermal Resistance, Case-to-Sink Typ.	0.5	---	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	62.5	62.5	°C/W

Electrical Characteristic (Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	650	--	--	V
ΔBV _{DSS} /Δ T _J	Breakdown Voltage Temperature Coefficient	I _D = 250 μA, Referenced to 25℃	--	0.8	--	V/℃
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 650 V, V _{GS} = 0 V	--	--	1	μA
		V _{DS} = 520 V, T _C =125℃	--	--	10	
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{GS} = 30 V, V _{DS} = 0 V	--	--	100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{GS} = -30 V, V _{DS} = 0 V	--	--	-100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	2	--	4	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 3.5A	--	1.1	1.3	Ω
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	--	3	--	Ω
g _{fs}	Forward Transconductance	V _{DS} =25V,I _D =3.5A	--	8	--	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	1100	--	pF
C _{oss}	Output Capacitance		--	105	--	pF
C _{rss}	Reverse Transfer Capacitance		--	10	--	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} = 325 V, I _D =7A R _G = 25Ω (note:4,5)	--	20	--	ns
t _r	Turn-On Rise Time		--	50	--	ns
t _{d(off)}	Turn-Off Delay Time		--	90	--	ns
t _f	Turn-Off Fall Time		--	55	--	ns
Q _g	Total Gate Charge	V _{DS} = 520 V, I _D = 7A V _{GS} = 10 V (note:4,5)	--	24	--	nC
Q _{gs}	Gate-Source Charge		--	5	--	nC
Q _{gd}	Gate-Drain Charge		--	9	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	7	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	28	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 7A	--	0.86	1.4	V

note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. The EAS data shows Max. rating . The test condition is $V_{DD}=80\text{ V}$, $V_{GS}=10\text{ V}$, $L=30\text{ mH}$, $I_{AS}=7\text{ A}$.
3. $I_{SD} \leq 7\text{ A}$, $di/dt \leq 200\text{ A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$.
4. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.

Typical Characteristics

