CMF80R450P

800V N-Channel MOSFET

General Description

CMF80R450P is power MOSFET using CMOS's advanced super junction technology that can realize very low on-resistance and gate charge. It will provide much high efficiency by using optimized charge coupling technology.

Product Summary

BVDSS	RDSON	ID
800V	0.4Ω	11A

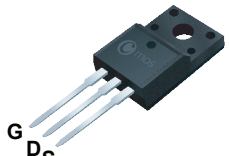
Applications

- Adaptor
- Motor Control
- DC – DC Converters
- PFC Power Supply Stages
- Switching Applications

Features

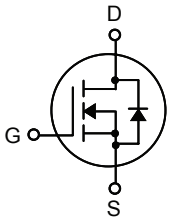
- RDS(ON)<0.4Ω @ VGS=11V
- 100% avalanche tested
- RoHS Compliant
- Low Power Loss by High Speed Switching and Low On-Resistance

TO-220F Pin Configuration



TO-220F

(CMF80R450P)



Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	800	V
I_D	Drain Current - Continuous (T_C = 25℃)	11	A
	Drain Current - Continuous (T_C = 100℃)	7	A
I_{DM}	Drain Current - Pulsed	33	A
V_{GSS}	Gate-Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy	260	mJ
P_D	Power Dissipation (T_C = 25℃)	35	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	3.72	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	℃/W

Electrical Characteristic (Tc=25℃ 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	800	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 800 V, V_{GS} = 0 V	--	--	1	μA
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 = 7A	--	0.3	0.4	Ω
g_{FS}	Forward Transconductance	V_{DS} = 15V, I_D = 4A	--	9	--	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	--	2.1	--	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =25V, V_{GS} = 0 V f = 1.0 MHz	--	2300	--	pF
C_{oss}	Output Capacitance		--	990	--	pF
C_{rss}	Reverse Transfer Capacitance		--	40	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 400 V, I_D = 11A R_G = 25 Ω ,V_{GS} = 10 V	--	25	--	ns
t_r	Turn-On Rise Time		--	45	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	120	--	ns
t_f	Turn-Off Fall Time		--	45	--	ns
Q_g	Total Gate Charge	V_{DS} = 640 V, I_D = 11A V_{GS} = 10 V	--	38	--	nC
Q_{gs}	Gate-Source Charge		--	7.5	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	11	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	33	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 10A	--	--	1.4	V
t_{rr}	Reverse Recovery Time	V_{DD} = 100V, I_F = 11A dI_F / dt = 100 A/μs	--	356	--	ns
Q_{rr}	Reverse Recovery Charge		--	4.7	--	μC

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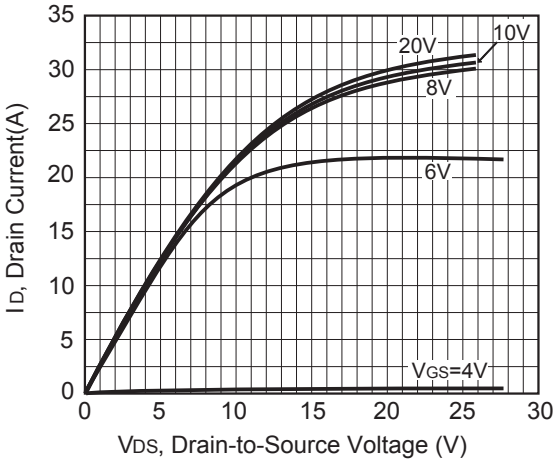
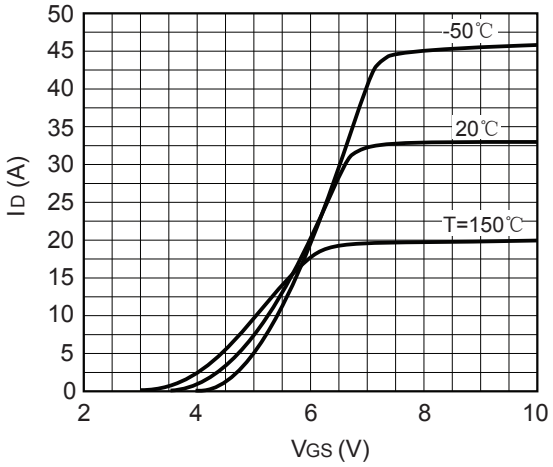
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

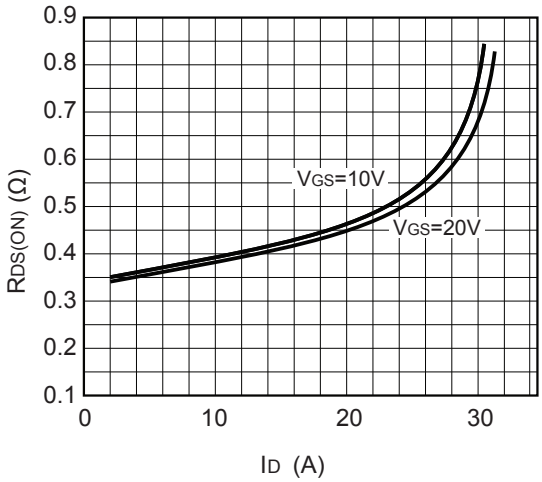
Typical Characteristics



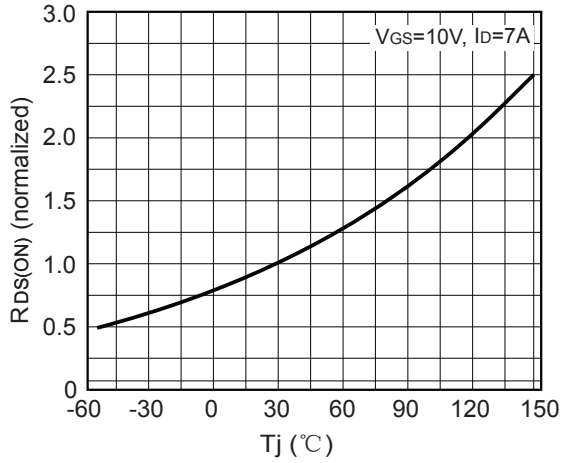
Output Characteristics



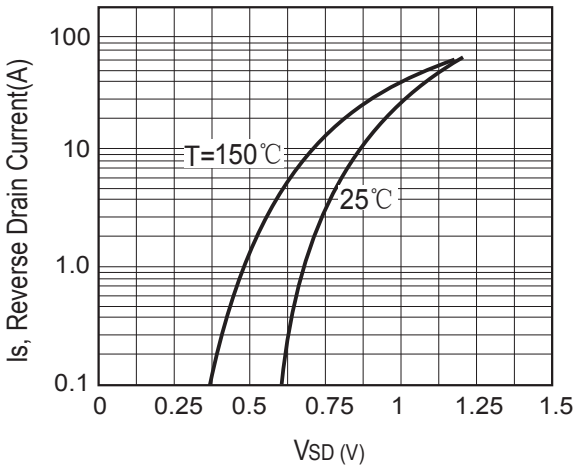
Transfer Characteristics



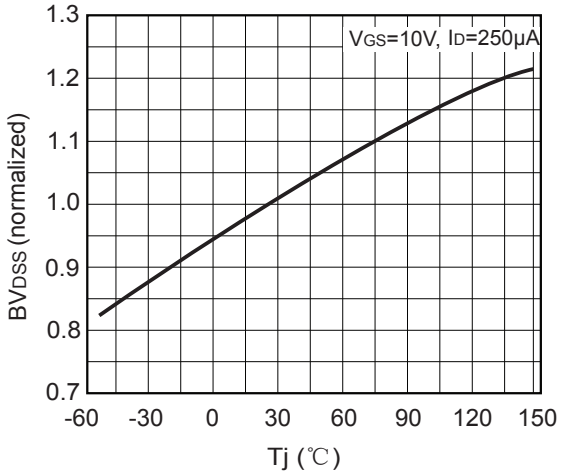
On-Resistance Variation with Drain Current and Gate Voltage



On-Resistance Variation with Temprature

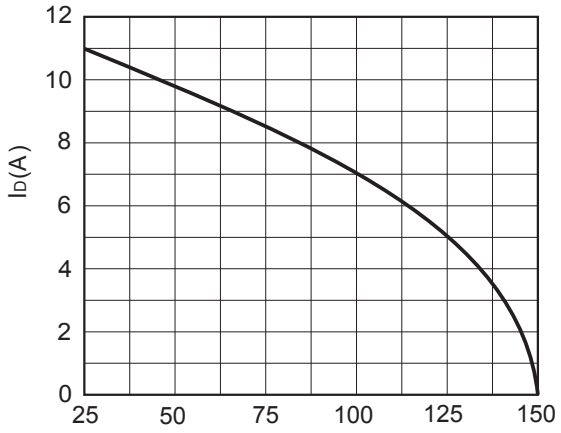


Body Diode Forward Voltage Variation with Source Current and Temperrature

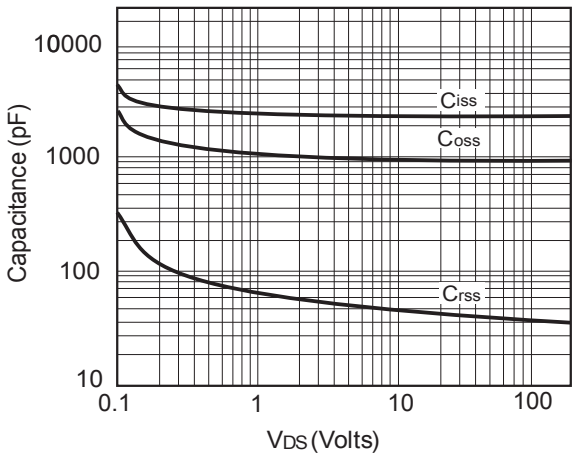


Breakdown Voltage Variation vs Temprature

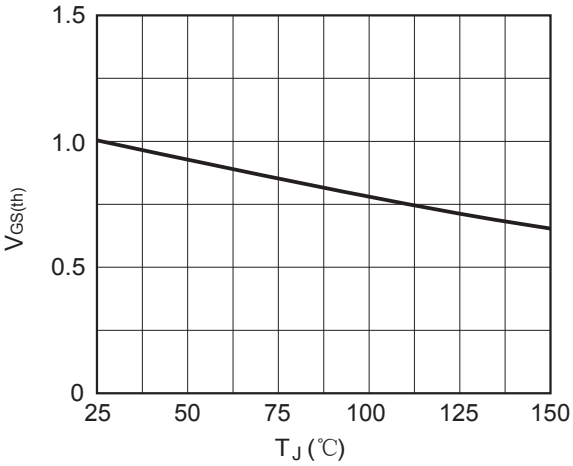
Typical Characteristics



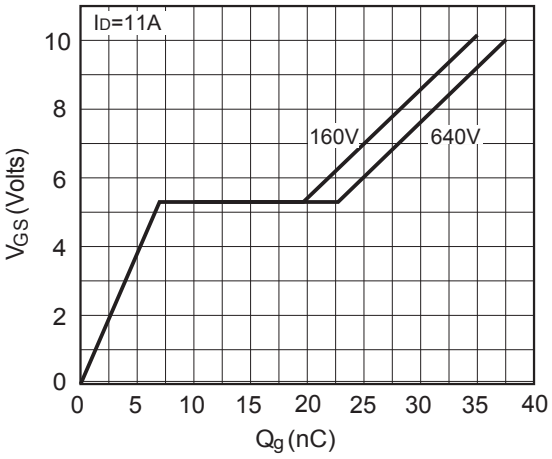
Maximum Drain Current vs. Case Temperature



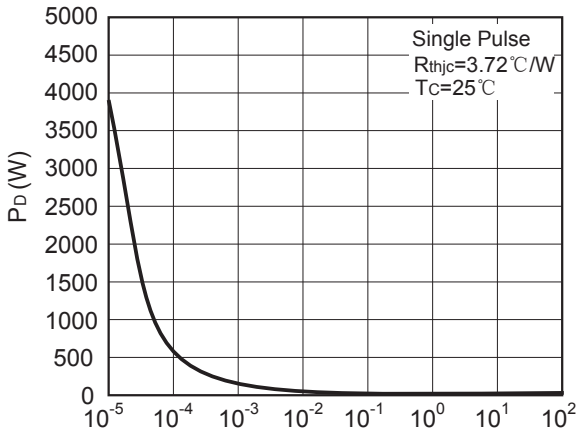
Capacitance Characteristics



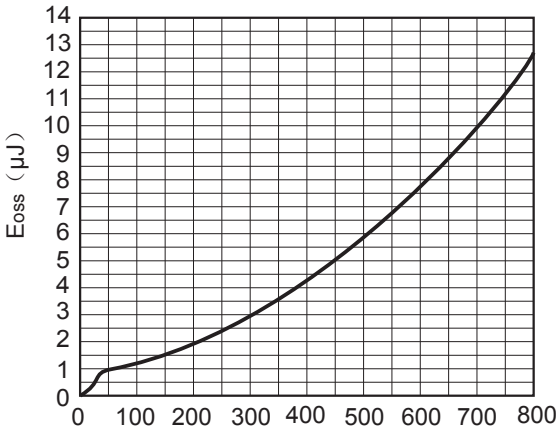
VGS(th) Variation with Temprature



Gate-Charge Characteristics

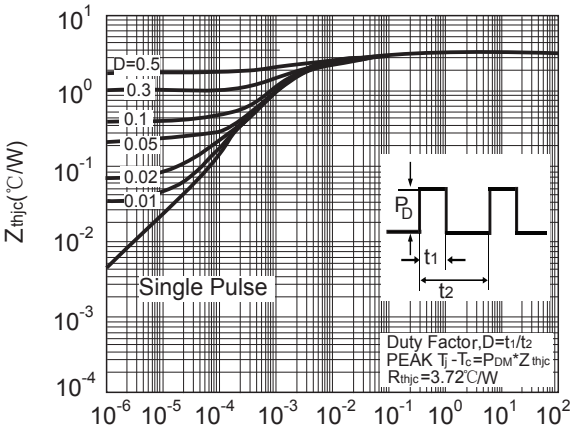


Transient Thermal Response Curve

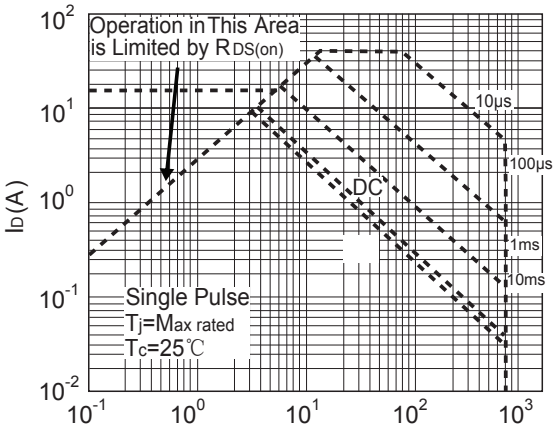


Output Capacitance Stored Energy

Typical Characteristics

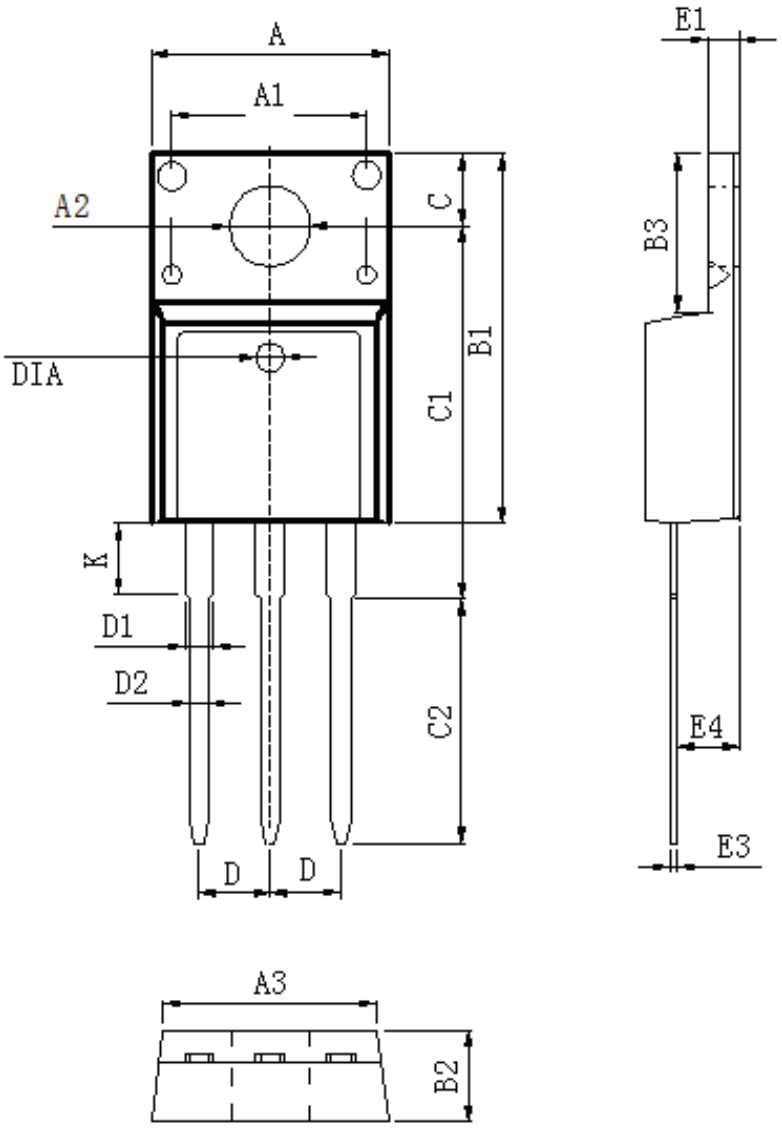


Transient Thermal Response Curve



Maximum Safe Operating Area

Package Dimensions



DIM	MILLIMETERS
A	10.16±0.3
A1	7.00±0.1
A2	3.3±0.2
A3	9.5±0.2
B1	15.87±0.3
B2	4.7±0.2
B3	6.68±0.4
C	3.3±0.2
C1	12.57±0.3
C2	10.02±0.5
D	2.54±0.05
D1	1.28±0.2
D2	0.8±0.1
K	3.1±0.3
E1	2.54±0.1
E3	0.5±0.1
E4	2.76±0.2
DIA	⊙1.5(deep 0.2)

Unit :mm

Dimensions in Millimeters