

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.

Features

- $R_{DS(ON)} < 0.4\Omega$ @ $V_{GS} = 11V$
- 100% avalanche tested
- RoHS Compliant
- Low Power Loss by High Speed Switching and Low On-Resistance

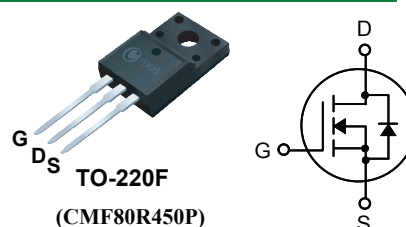
Product Summary

BVDSS	RDSON	ID
800V	0.4 Ω	11A

Applications

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

TO-220F Pin Configuration



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

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-Source Voltage	800	V
I _D	Drain Current - Continuous (T _C = 25°C)	11	A
	- Continuous (T _C = 100°C)	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°C)	35	W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Rating	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	3.72	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	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	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	800	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2	--	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	$V_{GS} = 10\text{ V}, I_D = 7\text{ A}$	--	0.3	0.4	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 4\text{ A}$	--	9	--	S
R_g	Gate Resistance	$V_{DS}=0\text{ V}, V_{GS}=0\text{ V}, f=1\text{ MHz}$	--	2.1	--	Ω

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS}=25\text{ V}, V_{GS} = 0\text{ V}$ $f = 1.0\text{ MHz}$	--	2300	--	pF
C_{oss}	Output Capacitance		--	990	--	pF
C_{rss}	Reverse Transfer Capacitance		--	40	--	pF

Switching Characteristics

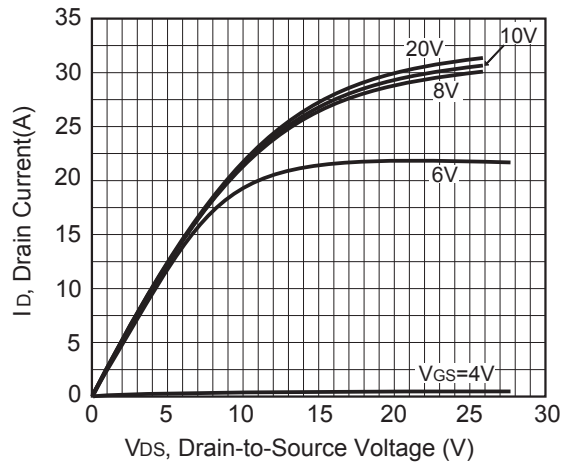
$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 400\text{ V}, I_D = 11\text{ A}$ $R_G = 25\text{ }\Omega, V_{GS} = 10\text{ V}$	--	25	--	ns
t_r	Turn-On Rise Time		--	45	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	120	--	ns
t_f	Turn-Off Fall Time		--	45	--	ns
Q_g	Total Gate Charge	$V_{DS} = 640\text{ V}, I_D = 11\text{ A}$ $V_{GS} = 10\text{ V}$	--	38	--	nC
Q_{gs}	Gate-Source Charge		--	7.5	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

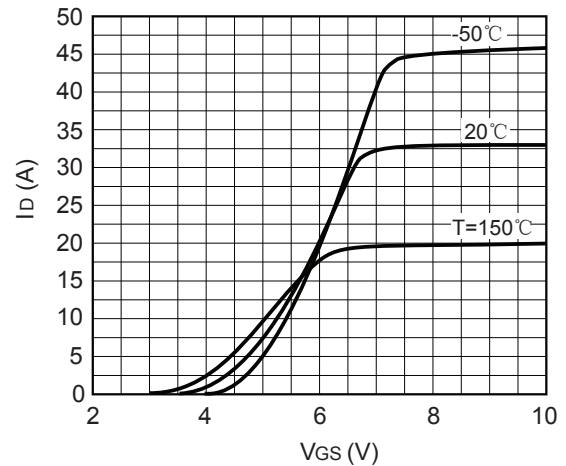
I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	11	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	33	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 10A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{DD} = 100V, I _F = 11A	--	356	--	ns
Q _{rr}	Reverse Recovery Charge	dI _F / dt = 100 A/μs	--	4.7	--	μC

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.

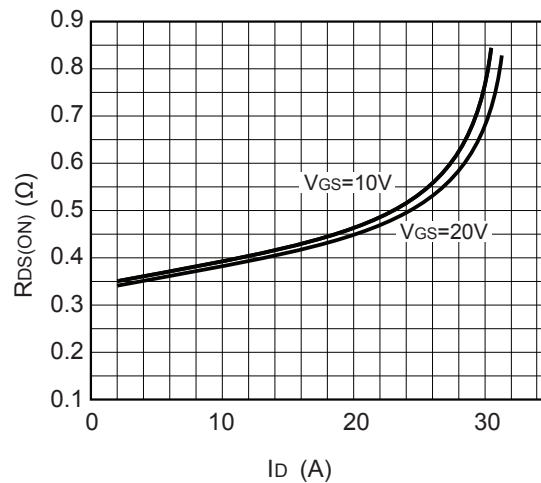
Typical Characteristics



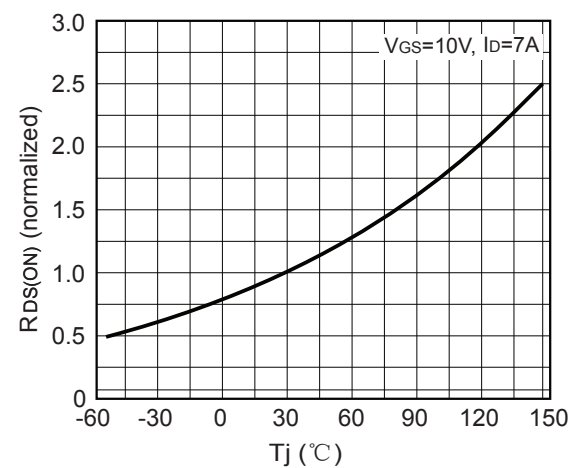
Output Characteristics



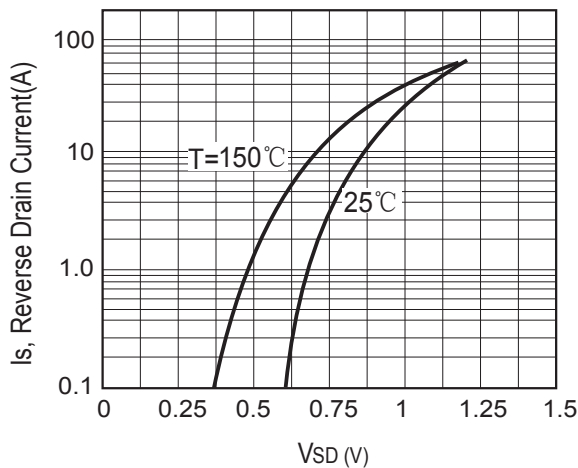
Transfer Characteristics



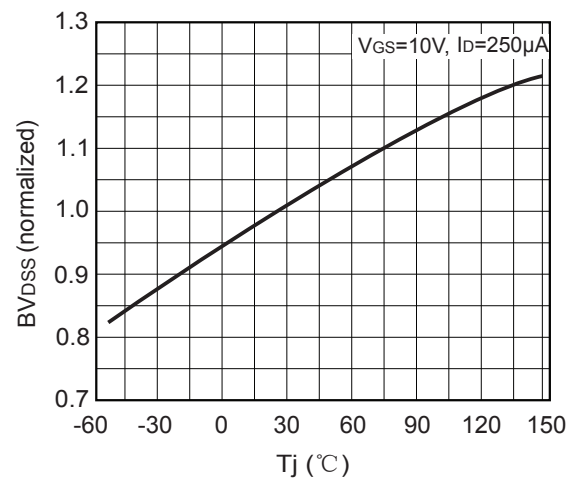
On-Resistance Variation with Drain Current and Gate Voltage



On-Resistance Variation with Temperature

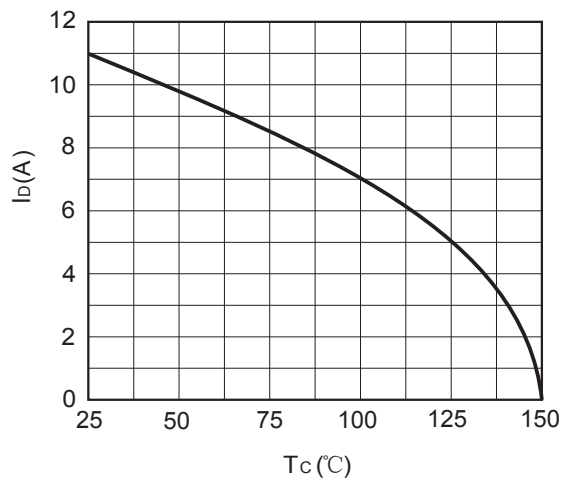


Body Diode Forward Voltage Variation with Source Current and Temperature

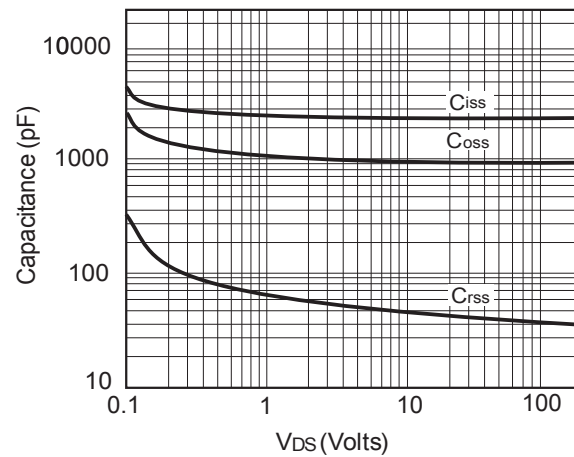


Breakdown Voltage Variation vs Temperature

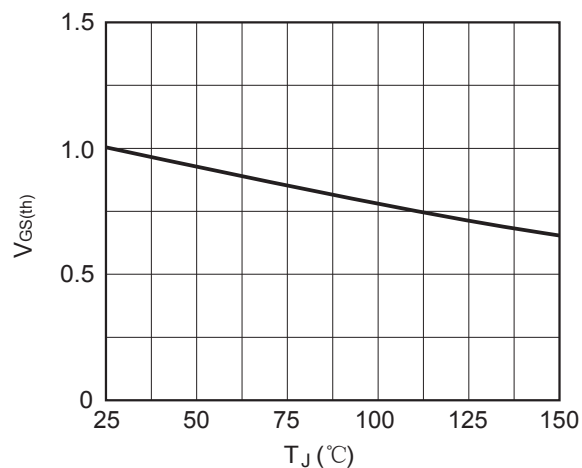
Typical Characteristics



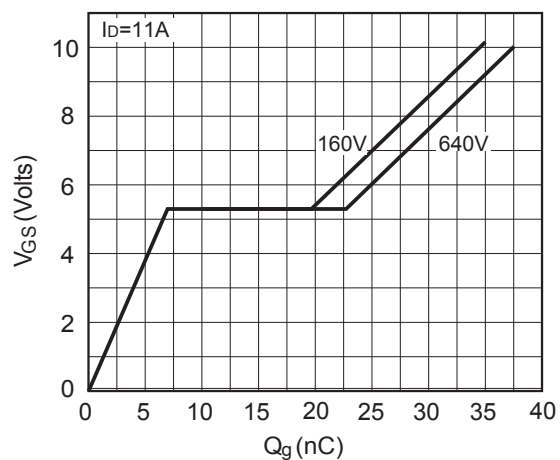
Maximum Drain Current vs. Case Temperature



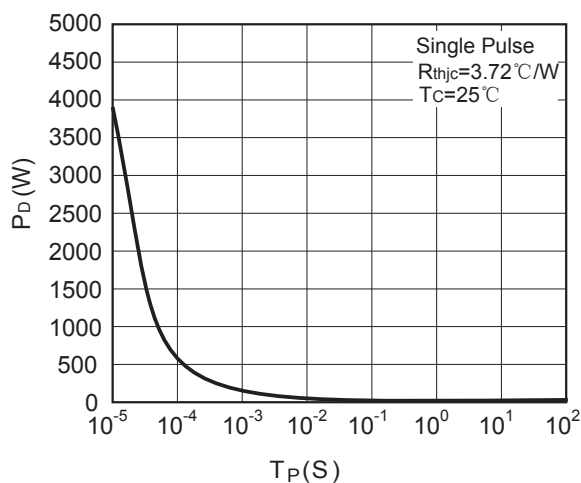
Capacitance Characteristics



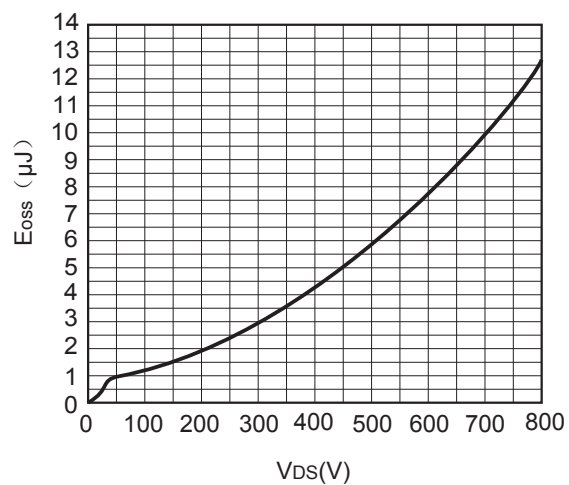
$V_{GS(th)}$ Variation with Temperature



Gate-Charge Characteristics

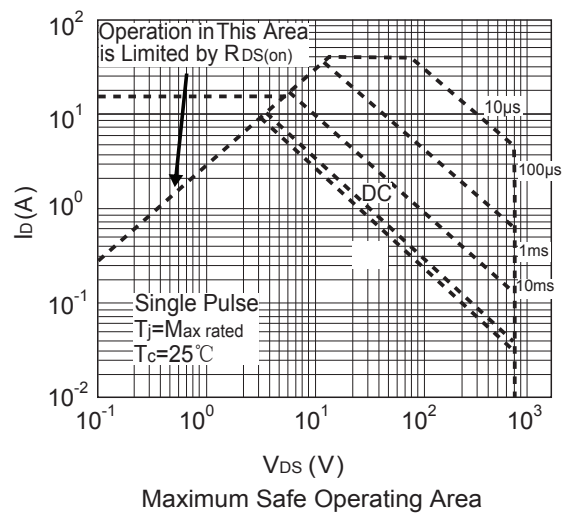
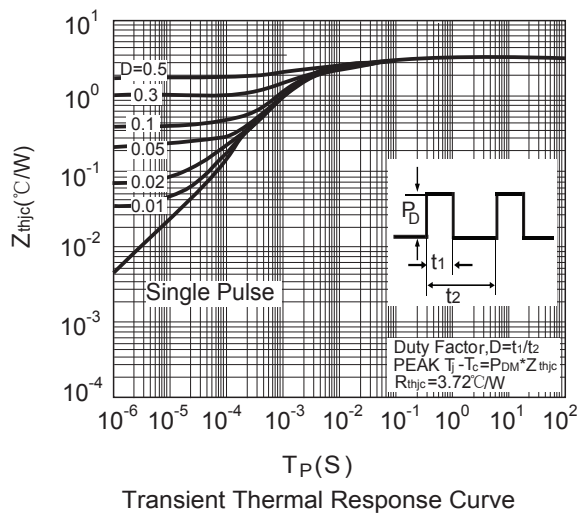


Transient Thermal Response Curve

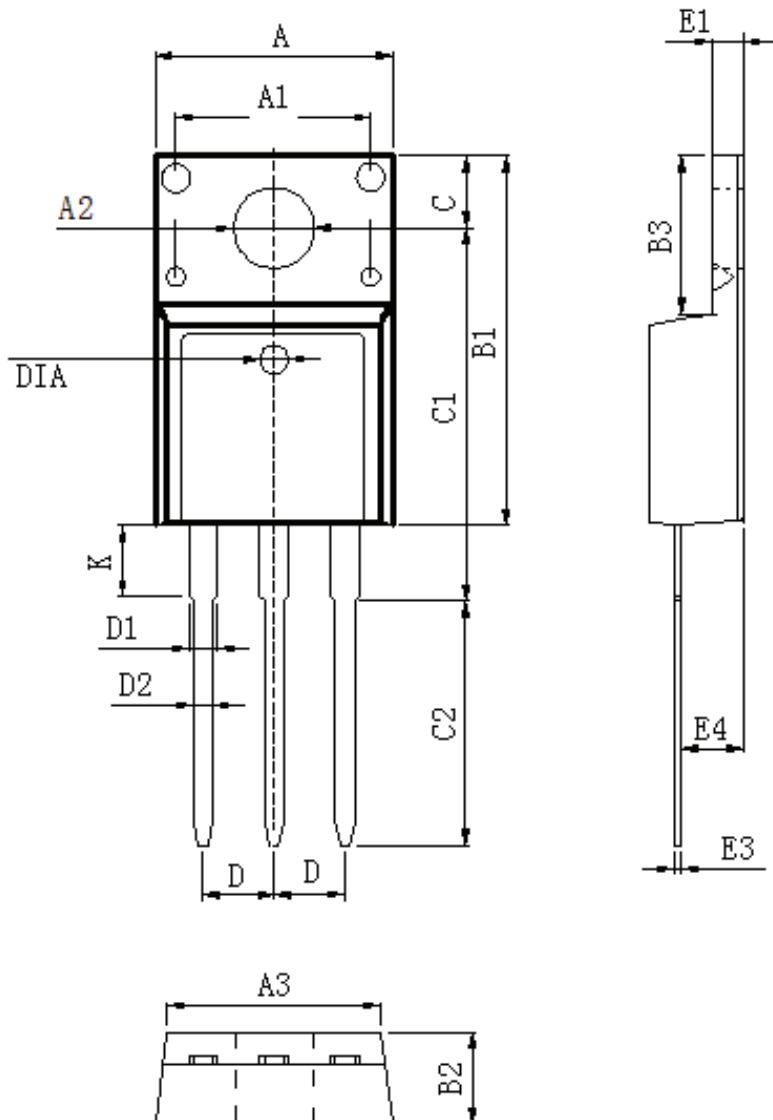


Output Capacitance Stored Energy

Typical Characteristics



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	$\odot 1.5$ (deep 0.2)

Unit :mm

Dimensions in Millimeters