CMF70R360

700V, 0.33Ω typ., 13A N-Channel Super Junction Power MOSFET

General Description

The CMF70R360 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. These user friendly devices give an advantage of Low EMI to designers as well as low switching loss.

Features

- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

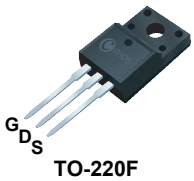
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
700V	0.36Ω	13A

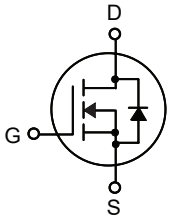
Applications

- Adaptor
- Motor Control
- DC – DC Converters

TO-220F Pin Configuration



TO-220F
(CMF70R360)



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

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	700	V
I_D	Drain Current - Continuous (T_C = 25℃)	13	A
	- Continuous (T_C = 100℃)	8	A
I_{DM}	Drain Current - Pulsed	52	A
V_{GSS}	Gate-Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy[1]	453	mJ
P_D	Power Dissipation (T_C = 25℃)	33	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 Max.	3.79	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	56	℃/W

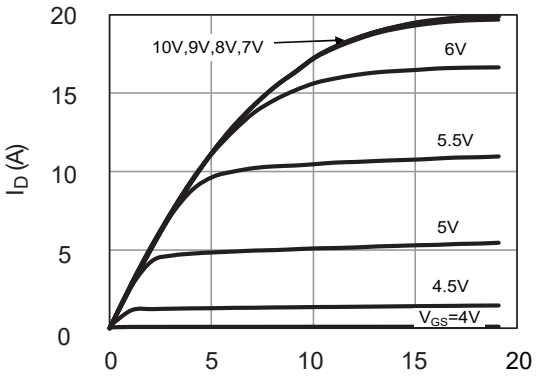
Electrical Characteristic (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	700	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 700 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	3	--	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	V_{GS} = 10 V, I_D = 6.5A	--	0.33	0.36	Ω
g_{FS}	Forward Transconductance	V_{DS} = 20V, I_D = 6.5A	--	7.2	--	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	--	8.2	--	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =45V, V_{GS} = 0 V f = 1.0 MHz	--	690	--	pF
C_{oss}	Output Capacitance		--	250	--	pF
C_{rss}	Reverse Transfer Capacitance		--	6	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 400 V, I_D = 6A R_G = 27 Ω ,V_{GS} = 10 V	--	20	--	ns
t_r	Turn-On Rise Time		--	26	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	105	--	ns
t_f	Turn-Off Fall Time		--	32	--	ns
Q_g	Total Gate Charge	V_{DS} = 480 V, I_D = 6A V_{GS} = 10 V	--	26	--	nC
Q_{gs}	Gate-Source Charge		--	3.7	--	nC
Q_{gd}	Gate-Drain Charge		--	14	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	13	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	52	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 11A	--	0.87	1.4	V
t_{rr}	Reverse Recovery Time	V_{DD} = 100V, I_F = 6A dI_F / dt = 100 A/μs	--	210	--	ns
Q_{rr}	Reverse Recovery Charge		--	2.05	--	μC

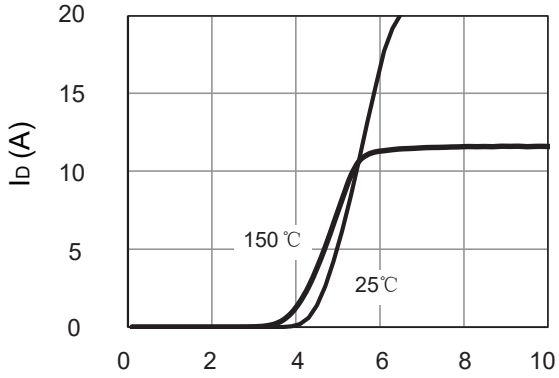
Note :

1.The EAS data shows Max. rating .The test condition is V_{DS}=80V , V_{GS}=10V , L=30mH , I_{AS}=5.5A.

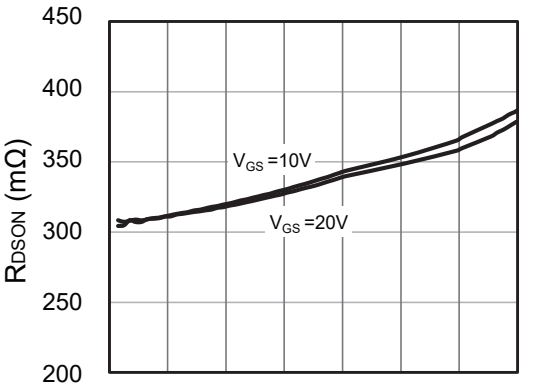
Typical Characteristics



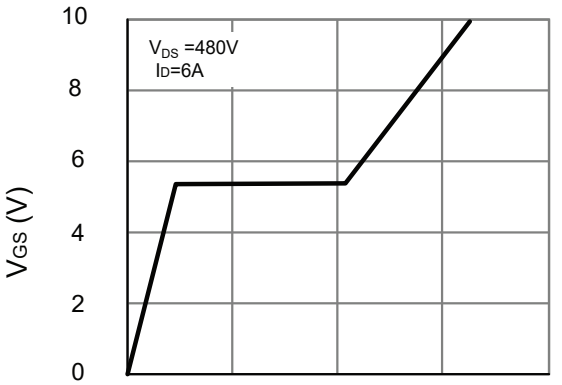
Output Characteristics



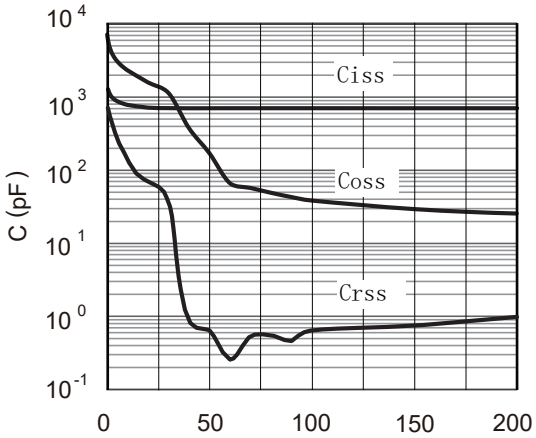
transfer characteristics



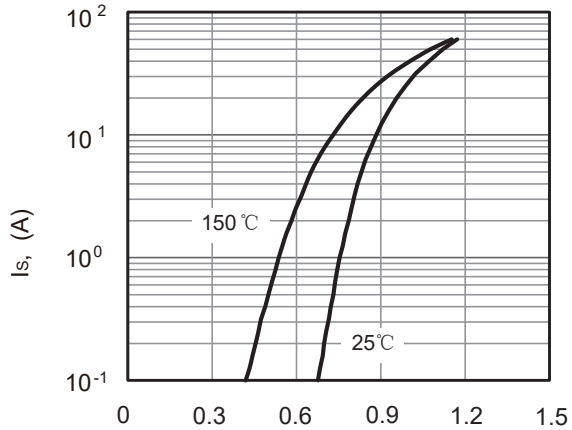
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics