CMSA120P03A

-30V, 3.1mΩ typ., -150A P-Channel MOSFET

General Description

The CMSA120P03A uses advanced trench technology to provide excellent RDS(ON). This device is ideal for load switch and battery protection applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	3.6mΩ	-150A

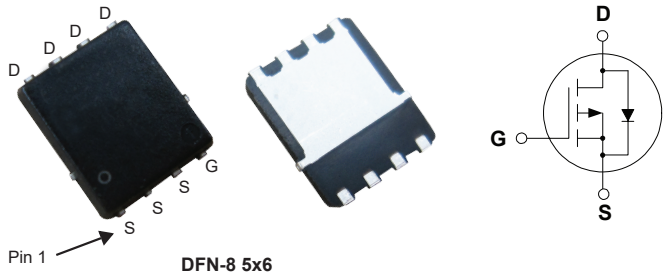
Applications

- Load Switch
- Power Management in Notebook Computer,Portable Equipment and Battery Powered Systems.

Features

- Low On-Resistance
- Simple Drive Requirements
- 100% EAS Guaranteed
- RoHS Compliant

DFN-8 5x6 Pin Configuration



DFN-8 5x6
CMSA120P03A

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-150	A
I_D@T_C=100℃	Continuous Drain Current	-105	A
I_{DM}	Pulsed Drain Current	-600	A
EAS	Single Pulse Avalanche Energy[1]	200	mJ
P_D@T_C=25℃	Total Power Dissipation	78	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient(Steady-State)	---	55	℃/W
$R_{\theta JC}$	Junction-to-Case	---	1.6	℃/W

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Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-28A	---	3.1	3.6	mΩ
		V_{GS}=-4.5V, I_D=-25A	---	4.2	5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-20A	---	41	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	22	---	Ω
Q_g	Total Gate Charge	V_{DS}=-15V , I_D=-30A V_{GS}=-10V	---	135	---	nC
Q_{gs}	Gate-Source Charge		---	12	---	
Q_{gd}	Gate-Drain Charge		---	36	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, V_{GEN} =-10V I_D=-1A , R_G=6Ω , R_L =15Ω	---	22	---	ns
T_r	Rise Time		---	25	---	
$T_{d(off)}$	Turn-Off Delay Time		---	163	---	
T_f	Fall Time		---	104	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	5000	---	pF
C_{oss}	Output Capacitance		---	600	---	
C_{rss}	Reverse Transfer Capacitance		---	380	---	

Diode Characteristics

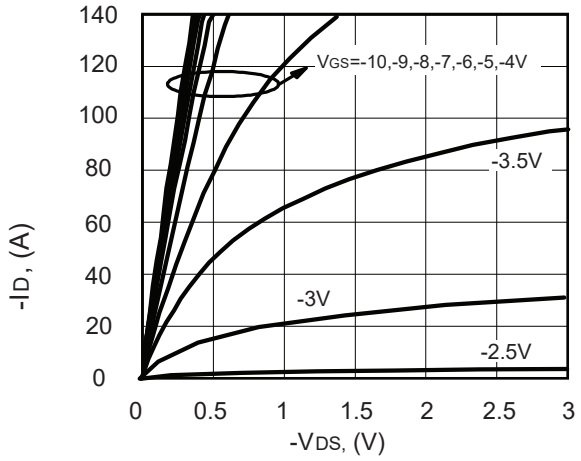
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-150	A
I_{SM}	Pulsed Source Current		---	---	-600	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-25A	---	-0.82	-1.2	V

Note :

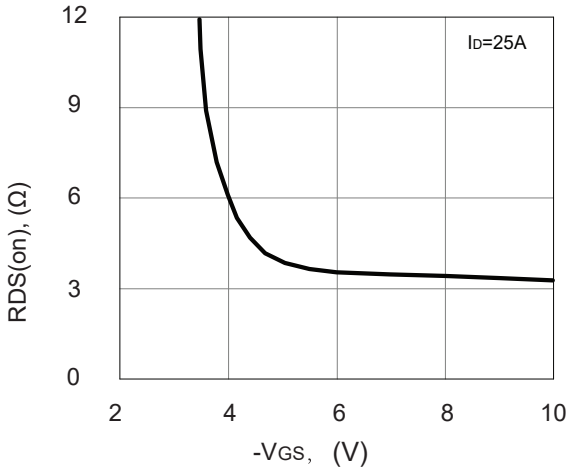
1.The EAS data shows Max. rating . The test condition is V_{DD}=-25V,V_{GS}=-10V,L=0.5mH,I_D=-28.3A

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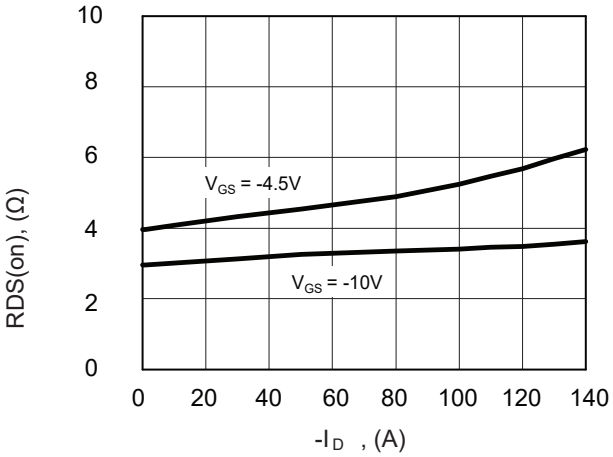
Typical Characteristics



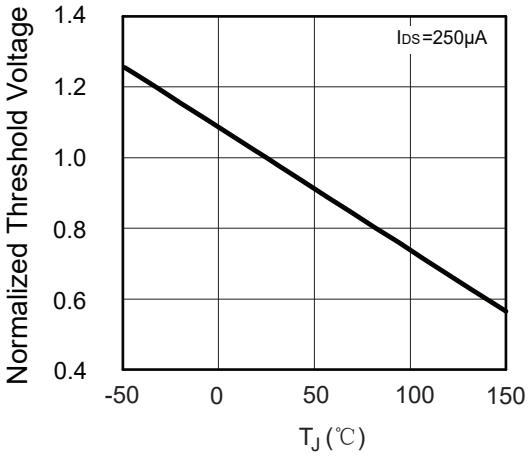
Typical Output Characteristics



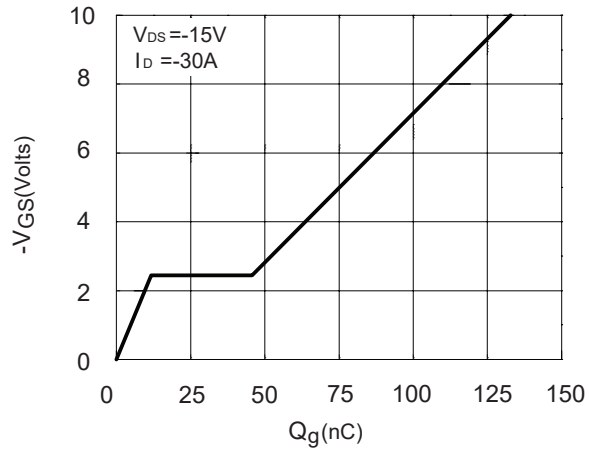
On-Resistance vs. Gate-Source Voltage



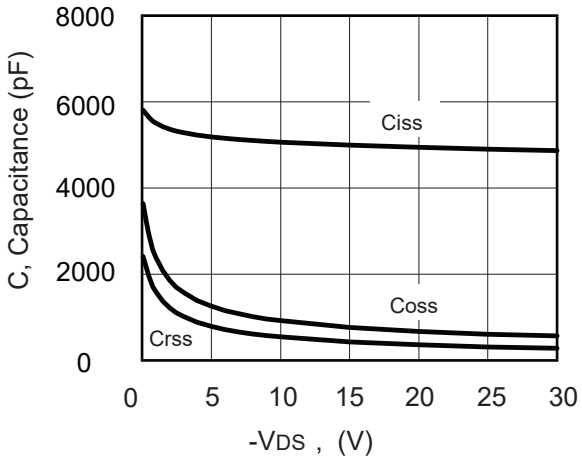
On-Resistance vs. Drain Current



Gate-Source Voltage vs. Junction Temperature



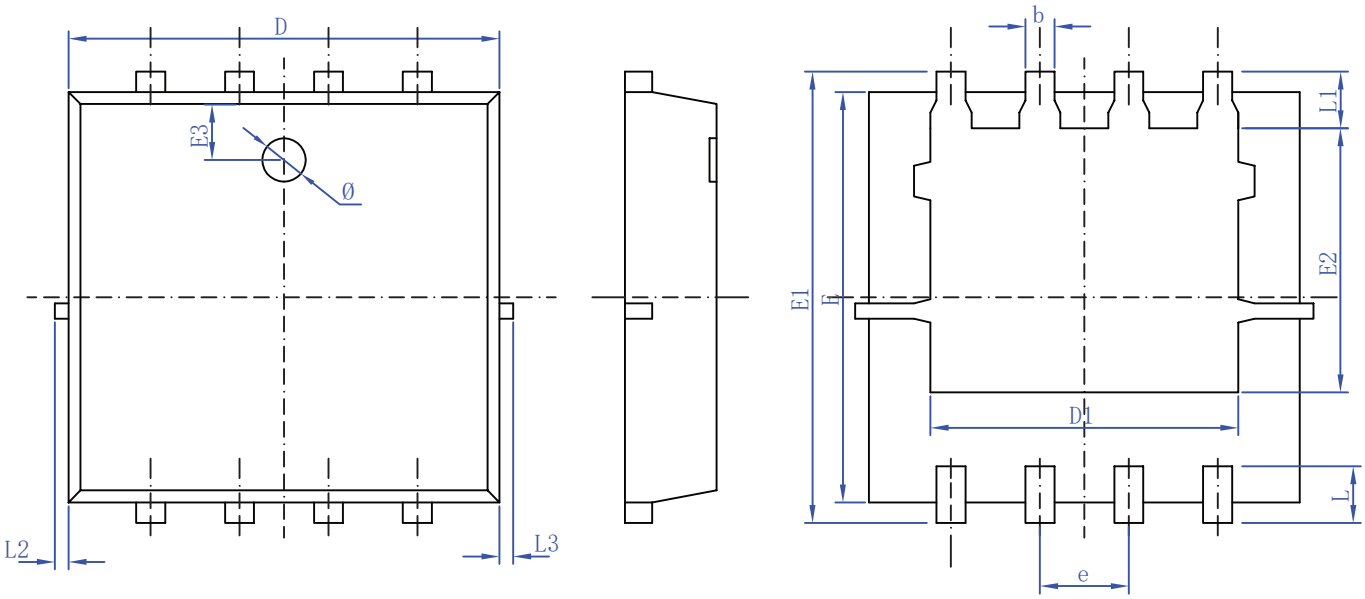
Gate Charge Characteristics

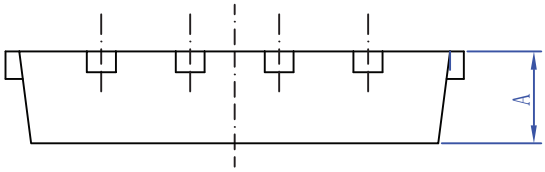


Capacitance Characteristics

Package Dimension

DFN-8 5x6 Unit :mm





Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		

注：
1.未注公差±0.05未标注圆角R max=0.25