

P-Channel Enhancement Mode Field Effect Transistor

General Description

The CMSA120P03 uses advanced trench technology to provide excellent RDS(ON).

This device is ideal for load switch and battery protection applications.

Features

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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	-150	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	-105	A
I_{DM}	Pulsed Drain Current	-600	A
EAS	Single Pulse Avalanche Energy ¹	650	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	110	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Junction-to-Ambient(Steady-State)	---	55	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case	---	1.5	$^\circ\text{C/W}$

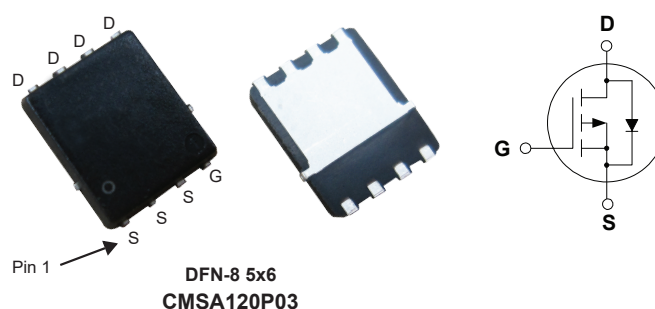
Product Summary

BVDSS	RDSON	ID
-30V	3.8m Ω	-150A

Applications

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

DFN-8 5x6 Pin Configuration



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Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-28A$	---	3	3.8	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-25A$	---	4.6	5.6	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-10A$	---	36	---	S
R_g	Gate Resistance	$V_{DS}=10V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=-10V$, $I_D=-20A$ $V_{GS}=-4.5V$	---	100	---	nC
Q_{gs}	Gate-Source Charge		---	20	---	
Q_{gd}	Gate-Drain Charge		---	30	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-10V$, $V_{GEN}=-4.5V$ $I_D=-1A$, $R_G=3\Omega$, $R_L=0.5\Omega$	---	20	---	ns
T_r	Rise Time		---	50	---	
$T_{d(off)}$	Turn-Off Delay Time		---	100	---	
T_f	Fall Time		---	40	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	7000	---	pF
C_{oss}	Output Capacitance		---	700	---	
C_{rss}	Reverse Transfer Capacitance		---	750	---	

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	$V_{GS}=0V$, $I_F=-28A$	---	-0.83	-1.2	V

Note :

1.The EAS data shows Max. rating . The test condition is $V_{DD}=-25V$, $V_{GS}=-10V$, $L=0.5mH$, $I_D=-51A$

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