CMSA90P03

-30V, 7.7mΩ typ., -90A P-Channel MOSFET

General Description

The CMSA90P03 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suited for Power Management and load switching applications common in Notebook Computers and Portable Battery Packs.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	9mΩ	-90A

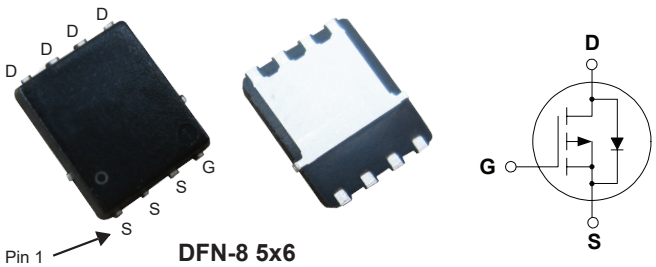
Applications

- High side in DC - DC Buck Converters
- Notebook battery power management
- Load switch in Notebook

Features

- Low On-Resistance
- 100% avalanche tested
- Small Footprint (5x6 mm) for Compact Design
- RoHS Compliant

DFN-8 5X6 Pin Configuration



DFN-8 5x6

Type	Package	Marking
CMSA90P03	DFN-8 5x6	CMSA90P03

Absolute Maximum Ratings (T_A=25 ℃ Unless Otherwise Noted)

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	-90	A
I_D@T_C=100℃	Continuous Drain Current	-63	A
I_{DM}	Pulsed Drain Current	-360	A
EAS	Single Pulse Avalanche Energy [1]	81	mJ
P_D@T_C=25℃	Total Power Dissipation	80	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.56	℃/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=-250μA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-28A	---	7.7	9.0	mΩ
		V_{GS}=-4.5V , I_D=-20A	---	11.6	14	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = -250μA	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V, V_{GS}=0V	---	---	-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	---	21	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	19	---	Ω
Q_g	Total Gate Charge	V_{DS}=-24V , I_D=-20A V_{GS}=-10V	---	58	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, V_{GEN} =-10V , I_D =-10A R_G=4.7Ω	---	7	---	ns
T_r	Rise Time		---	14	---	
$T_{d(off)}$	Turn-Off Delay Time		---	86	---	
T_f	Fall Time		---	252	---	
C_{iss}	Input Capacitance	V_{DS}=-25V , V_{GS}=0V , f=1MHz	---	2500	---	pF
C_{oss}	Output Capacitance		---	260	---	
C_{rss}	Reverse Transfer Capacitance		---	210	---	

Diode Characteristics

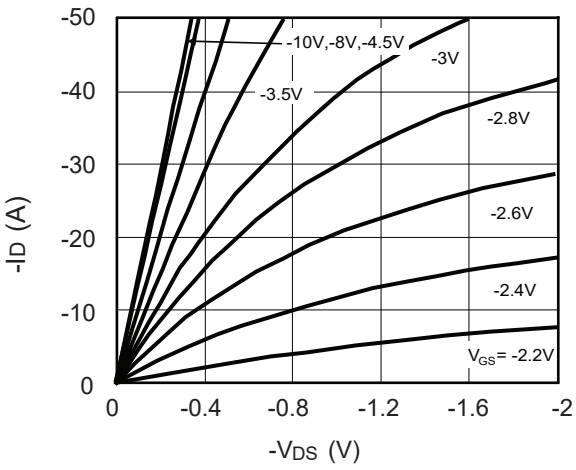
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-90	A
I_{SM}	Pulsed Source Current		---	---	-360	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-28A , T_J=25℃	---	-0.89	-1.3	V

Note :

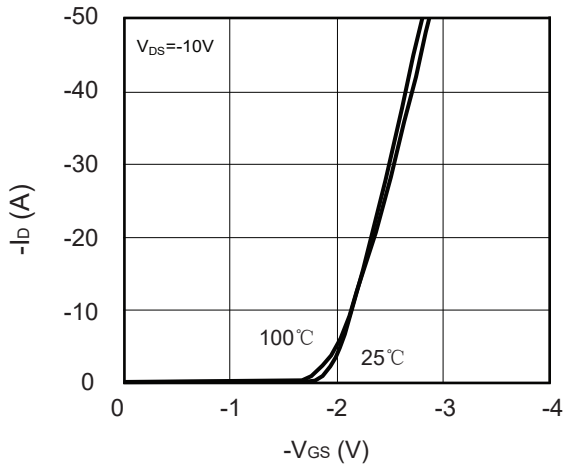
1.The EAS data shows Max. rating . The test condition is V_{DD}=-25V , V_{GS}=-10V , L=0.5mH , I_{AS}=-18A.

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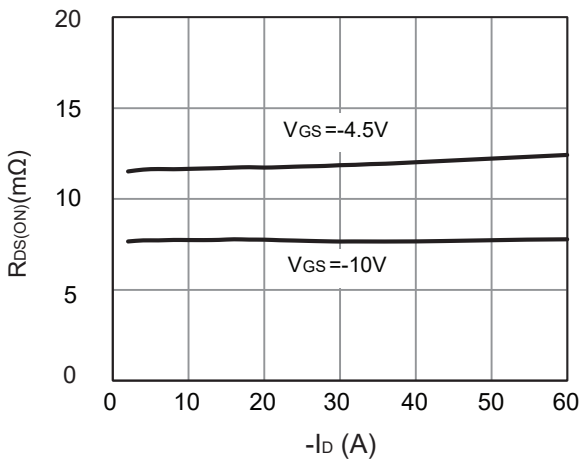
Typical Characteristics



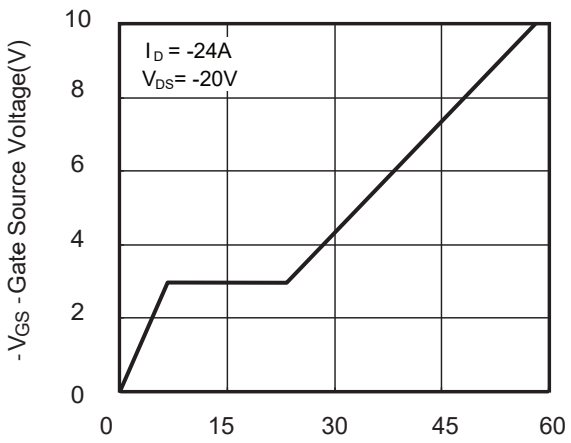
On-Region Characteristics



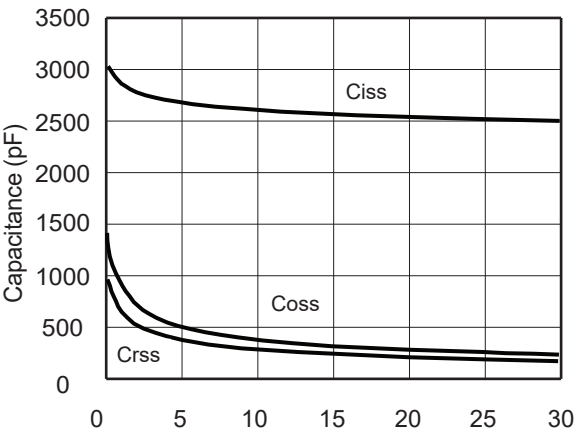
transfer characteristics



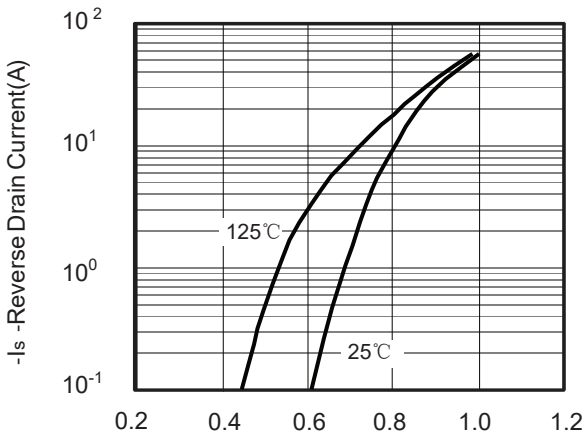
On-Resistance vs. Drain Current



Gate Charge Characteristics



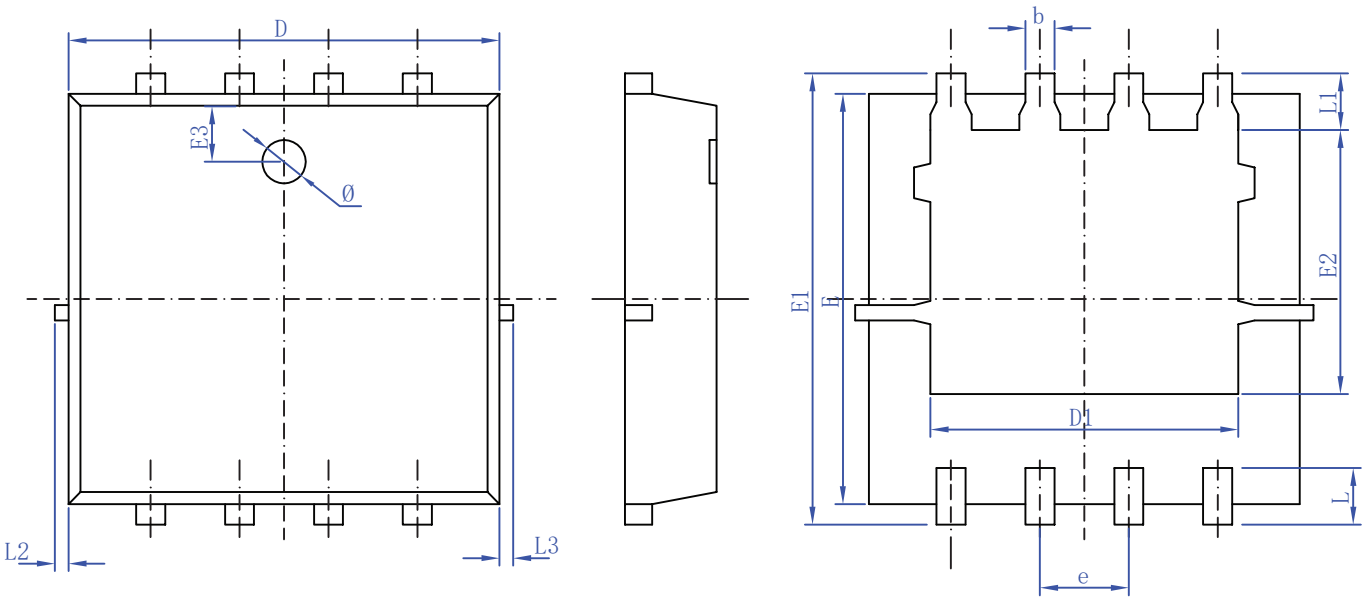
Capacitance Characteristics

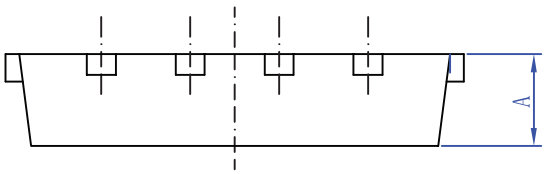


Body Diode Forward Voltage Variation with Source Current and Temperature

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