

General Description

These P-Channel enhancement mode power field effect transistors use advanced trench technology and design to provide excellent RDS(ON) . This device is ideal for load switch and battery protection applications.

Features

- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	-150	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	-100	A
I_{DM}	Pulsed Drain Current	-450	A
EAS	Single Pulse Avalanche Energy ¹	780	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	125	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1	°C/W

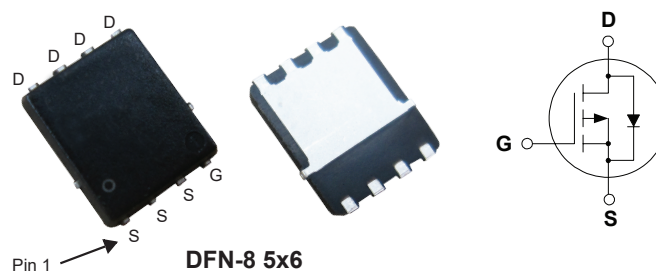
Product Summary

BVDSS	R _{DS(on)} max.	ID
-30V	2.8mΩ	-150A

Applications

- DC-DC Converters
- Power Management Switches
- Lithium-Ion Secondary Batteries

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA180P03	DFN-8 5x6	CMSA180P03

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-20A$	---	2.3	2.8	mΩ
		$V_{GS}=-4.5V$, $I_D=-15A$	---	3	3.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1.0	---	-2.2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-30V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	uA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-10A$	---	43	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	19	---	Ω
Q_g	Total Gate Charge	$V_{DD}=-15V$, $I_D=-20A$ $V_{GS}=-10V$	---	163	---	nC
Q_{gs}	Gate-Source Charge		---	22	---	
Q_{gd}	Gate-Drain Charge		---	33	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=-15V$, $V_{GS}=-10V$, $R_{GEN}=3\Omega$ $R_L=0.75\Omega$	---	13	---	ns
T_r	Rise Time		---	18	---	
$T_{d(off)}$	Turn-Off Delay Time		---	135	---	
T_f	Fall Time		---	52	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	7900	---	pF
C_{oss}	Output Capacitance		---	980	---	
C_{rss}	Reverse Transfer Capacitance		---	650	---	

Diode Characteristics

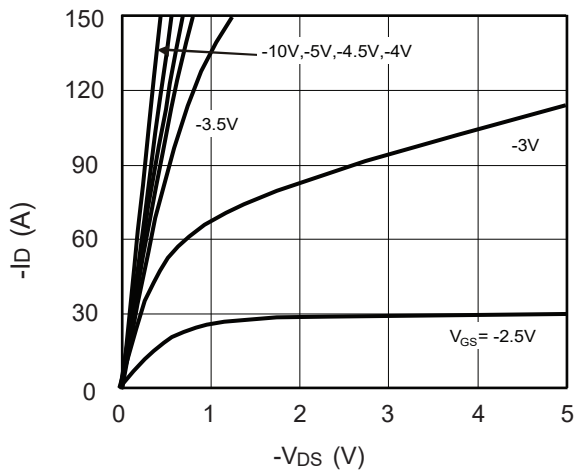
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-150	A
I_{SM}	Pulsed Source Current		---	---	-450	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=-28A$	---	-0.8	-1.2	V

Note :

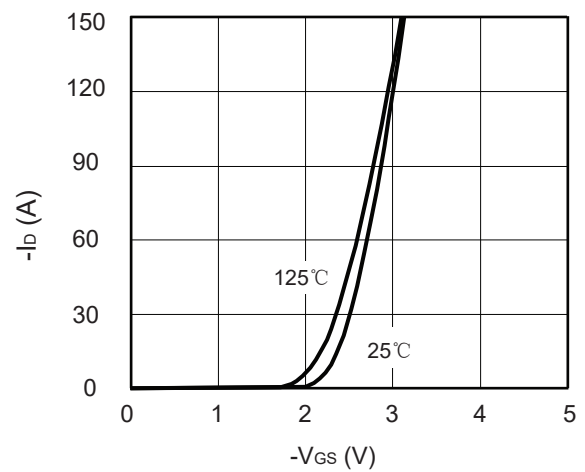
1.The EAS data shows Max. rating . The test condition is $V_{DD}=-30V$, $V_{GS}=-10V$, $L=1\text{mH}$, $I_{AS}=-39.5A$.

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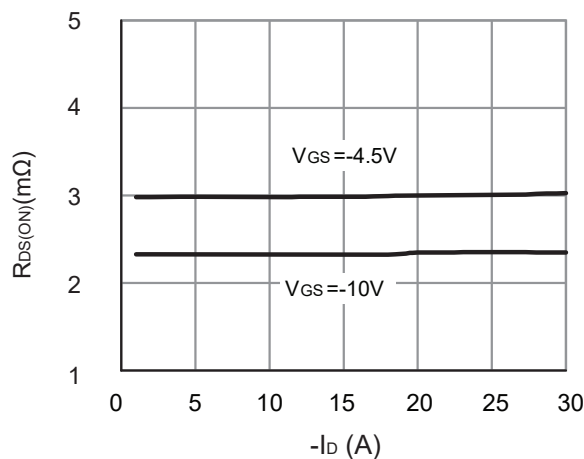
Typical Characteristics



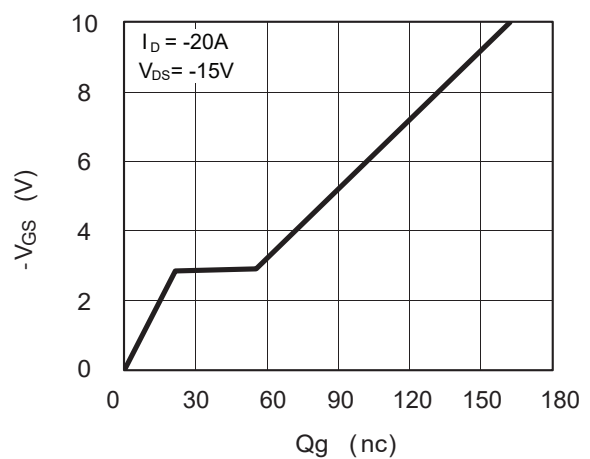
On-Region Characteristics



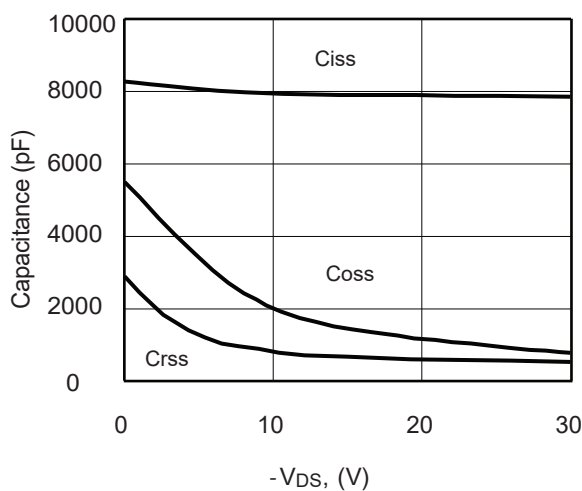
transfer characteristics



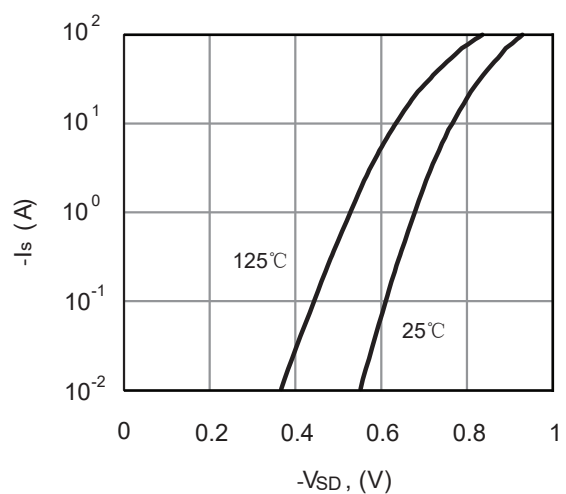
On-Resistance vs. Drain Current



Gate Charge Characteristics



Capacitance Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature