



CEP83A3/CEB83A3

N-Channel Enhancement Mode Field Effect Transistor

General Description

The 83A3 is N-ch MOSFET with extreme high cell density, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

Features

- Simple Drive Requirement
- Fast Switching
- Low On-Resistance

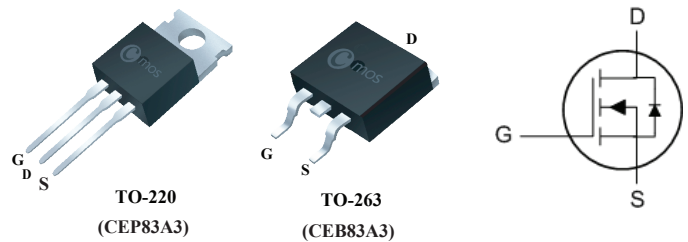
Product Summary

BVDSS	RDS(on)	ID
30V	4.8mΩ	100A

Applications

- LED power controller
- DC-DC & DC-AC converters
- High current, high speed switching
- Solenoid and relay drivers
- Motor control, Audio amplifiers

TO-220/263 Pin Configuration



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	100	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	56	A
I_{DM}	Pulsed Drain Current ¹	320	A
EAS	Single Pulse Avalanche Energy ²	156	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	85	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	1.8	$^\circ C/W$



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	$V_{GS}=10V, I_D=40A$	3.5	4.5	4.8	m Ω
		$V_{GS}=4.5V, I_D=20A$	---	---	7	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.7	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V$	---	---	1	uA
		$V_{DS}=30V, V_{GS}=0V, T_C=125^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=23A$	---	25	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2.5	---	Ω
Q_g	Total Gate Charge	$I_D=40A$	---	37	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=15V$	---	7	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=5V$	---	18	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V$	---	30	---	ns
T_r	Rise Time	$I_D=40A$	---	25	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=4.7\Omega$	---	50	---	
T_f	Fall Time	$V_{GS}=4.5V$	---	22	---	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	2500	---	pF
C_{oss}	Output Capacitance		---	500	---	
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	---	---	100	A
I_{SM}	Pulsed Source Current ¹		---	---	320	A
V_{SD}	Diode Forward Voltage ¹	$V_{GS}=0V, I_S=40A, T_J=25^{\circ}\text{C}$	---	---	1.2	V

Note :

- 1.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 2.The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=25A$

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