

General Description

These P-Channel enhancement mode power field effect transistors use advanced packaging technology and design to provide excellent $R_{DS(ON)}$. This device is suitable for use as a load switch or in PWM applications.

Features

- P-channel Enhancement mode
- 100% Avalanche tested
- 175°C operating temperature
- RoHS compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±12	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	-90	A
I_{DM}	Pulsed Drain Current	-270	A
EAS	Single Pulse Avalanche Energy ¹	240	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	135	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.1	°C/W

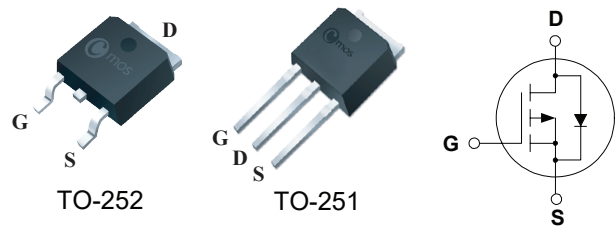
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	8.8mΩ	-90A

Applications

- DC-DC Converters
- LCD Display inverter
- Power Management in Note book

TO252 / TO251 Pin Configuration



Type	Package	Marking
CMD90P03	TO-252	CMD90P03
CMU90P03	TO-251	CMU90P03

Electrical Characteristics (T_J=25°C , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-1mA	-30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-20A	---	7	8.8	mΩ
		V _{GS} =-4.5V, I _D =-10A	---	10	16	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	---	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-24V, V _{GS} =0V , T _J =25°C	---	---	-1	uA
		V _{DS} =-24V, V _{GS} =0V , T _J =125°C	---	---	-100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±12V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5 V , I _D =-15A	---	30	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	15	---	Ω
Q _g	Total Gate Charge	V _{DD} =-24V , I _D =-90A V _{GS} =0 to -10V	---	125	---	nC
Q _{gs}	Gate-Source Charge		---	30	---	
Q _{gd}	Gate-Drain Charge		---	15	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GS} =-10V, R _G =3.5Ω I _D =-90A	---	20	---	ns
T _r	Rise Time		---	12	---	
T _{d(off)}	Turn-Off Delay Time		---	140	---	
T _f	Fall Time		---	40	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V , f=1MHz	---	2900	---	pF
C _{oss}	Output Capacitance		---	250	---	
C _{rss}	Reverse Transfer Capacitance		---	190	---	

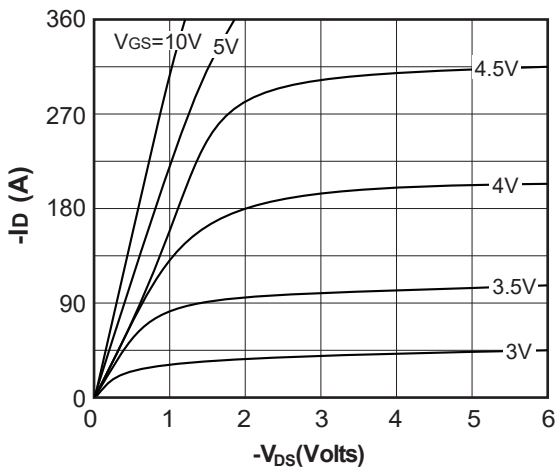
Diode Characteristics

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 _F =-20A T _j =25°C	---	---	-1.2	V

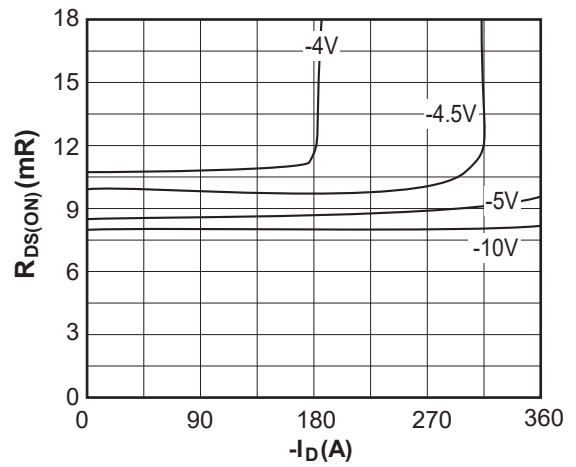
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=25V , V_{GS}=10V , L=0.5mH , I_{AS} =31A.

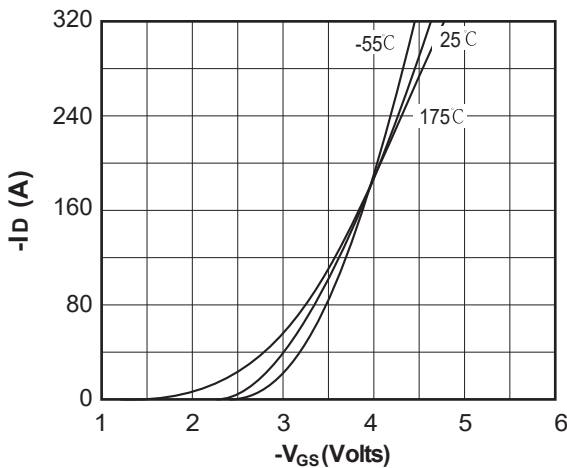
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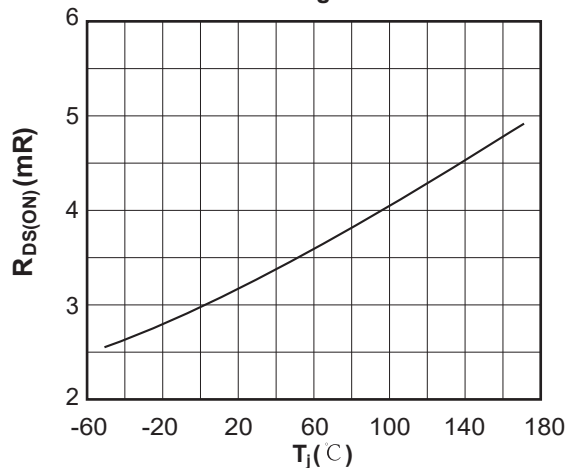
On-Region Characteristics



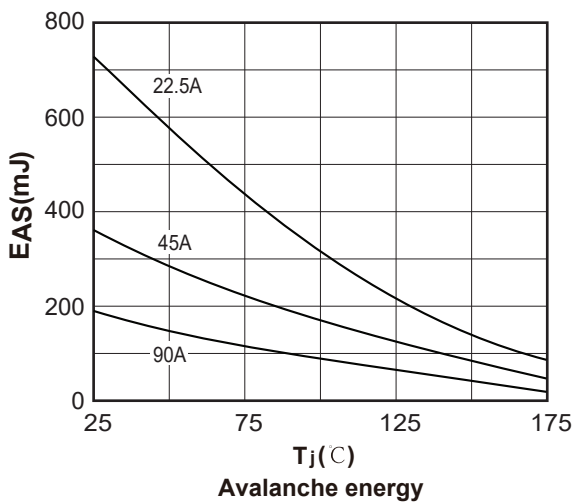
On-Resistance vs. Drain Current and Gate Voltage



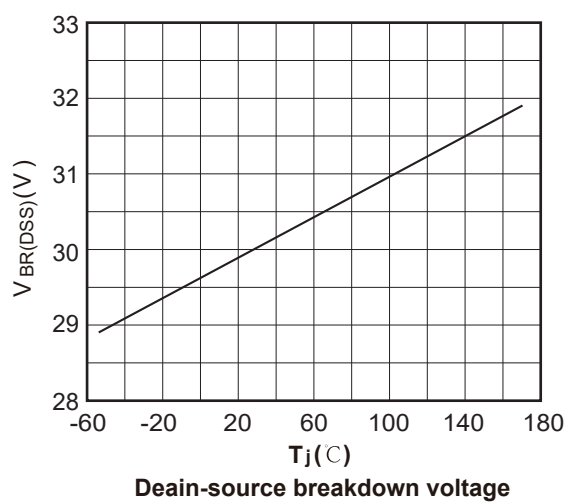
Transfer Characteristics



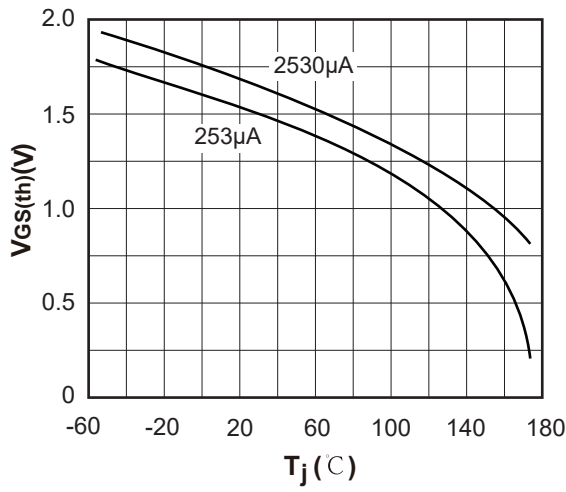
drain-source on-state resistance



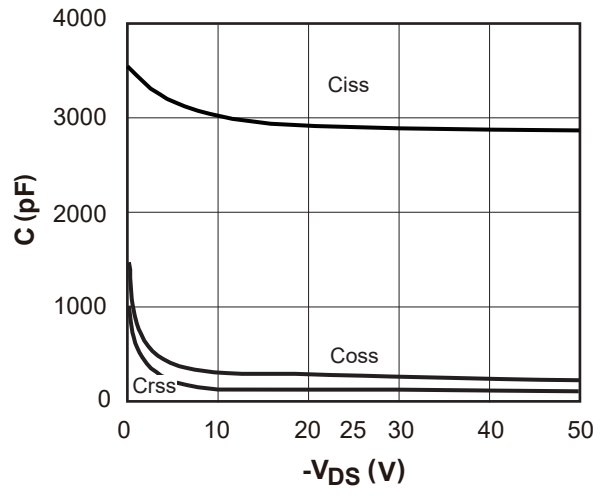
Avalanche energy



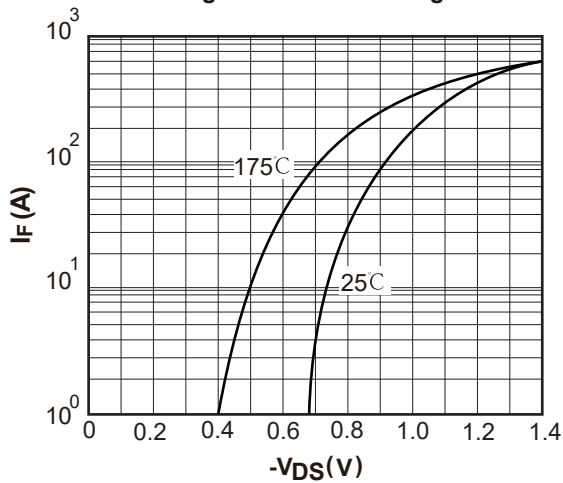
Deain-source breakdown voltage



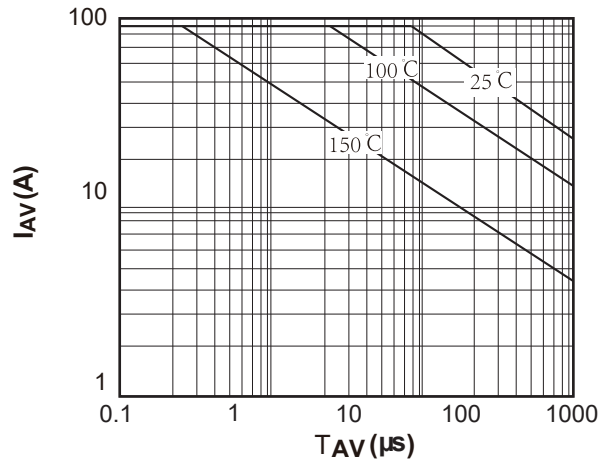
gate threshold voltage



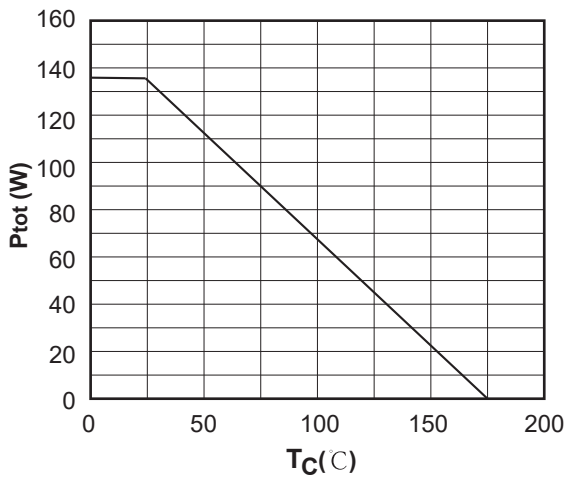
capacitances



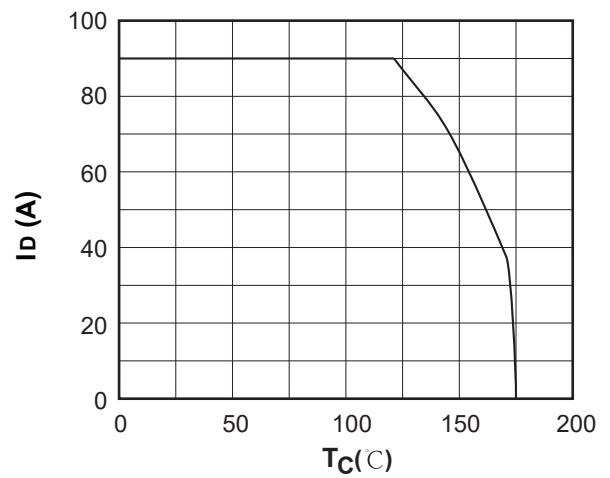
Typical forward diode characteristics



Avalanche characteristics



Power dissipation



Drain current

