

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
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	-90	A
I_{DM}	Pulsed Drain Current	-270	A
EAS	Single Pulse Avalanche Energy ¹	240	mJ
$P_D@T_C=25^\circ\text{C}$	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

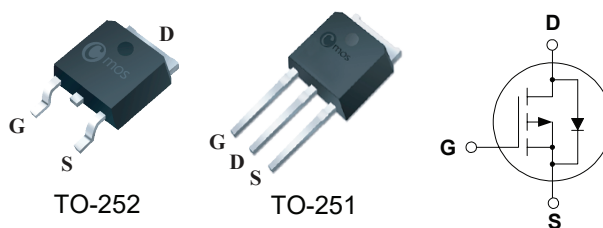
Product Summary

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	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	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-24V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	-1	uA
		$V_{DS}=-24V$, $V_{GS}=0V$, $T_J=125^{\circ}\text{C}$	---	---	-100	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-5V$, $I_D=-15A$	---	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	$V_{DD}=-15V$, $V_{GS}=-10V$, $R_G=3.5\Omega$ $I_D=-90A$	---	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	$V_{GS}=0V$, $I_F=-20A$, $T_J=25^{\circ}\text{C}$	---	---	-1.2	V

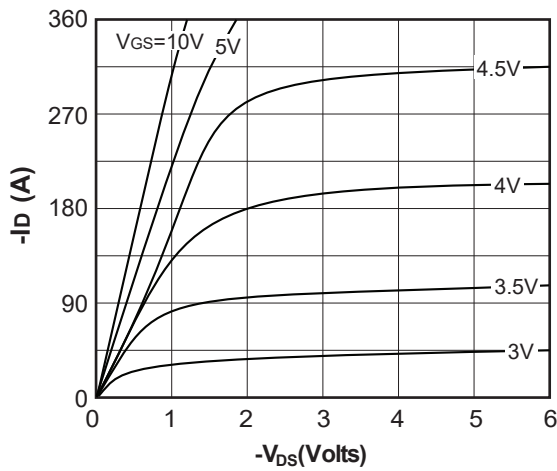
Note :

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

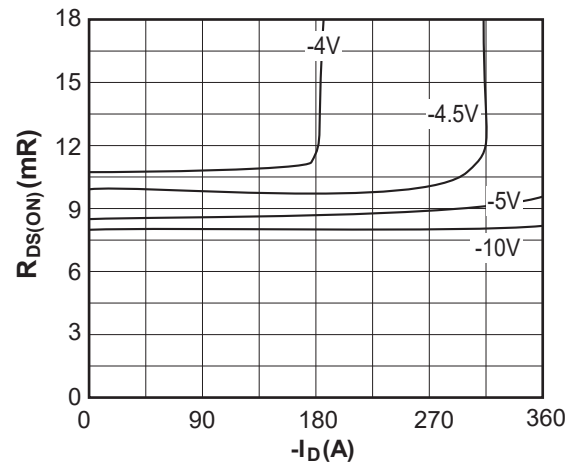
This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

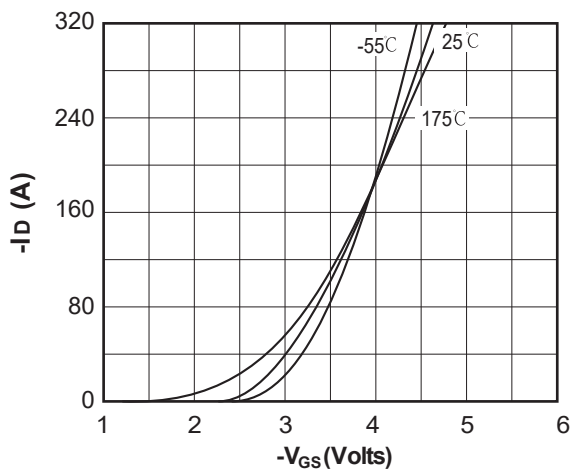
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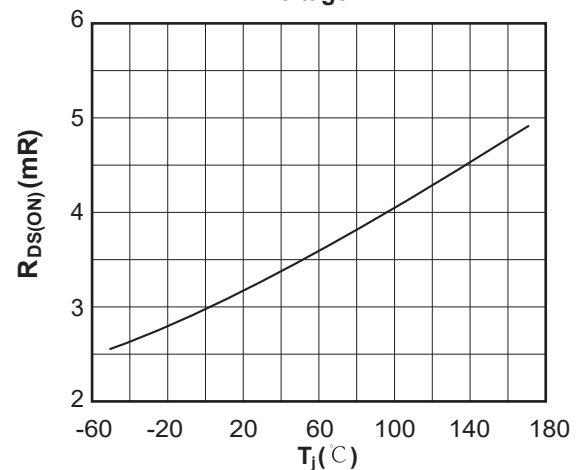
On-Region Characteristics



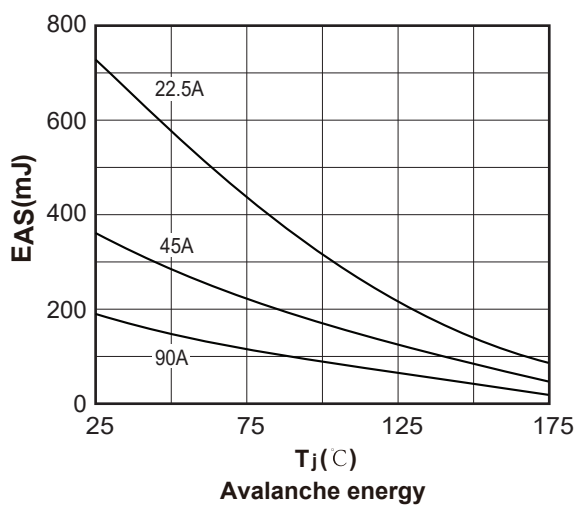
On-Resistance vs. Drain Current and Gate Voltage



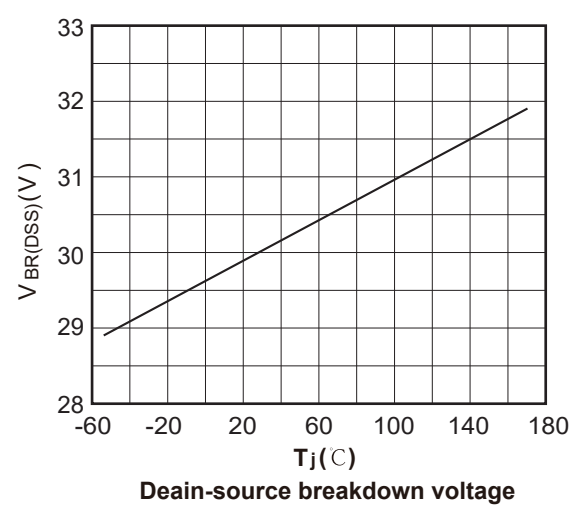
Transfer Characteristics



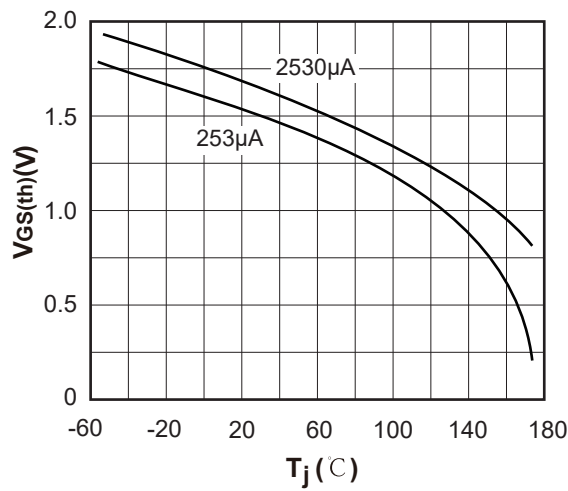
drain-source on-state resistance



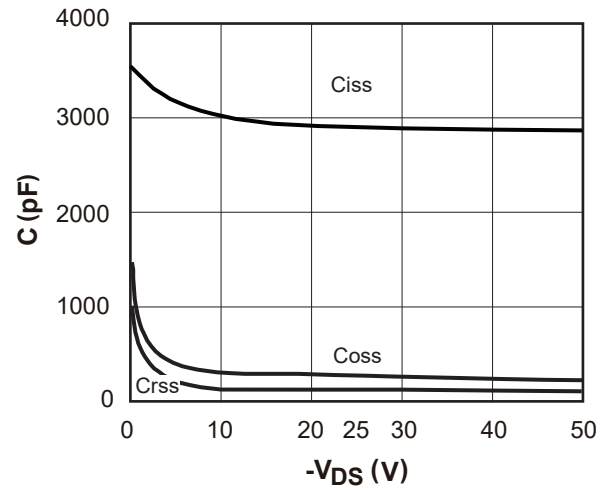
Avalanche energy



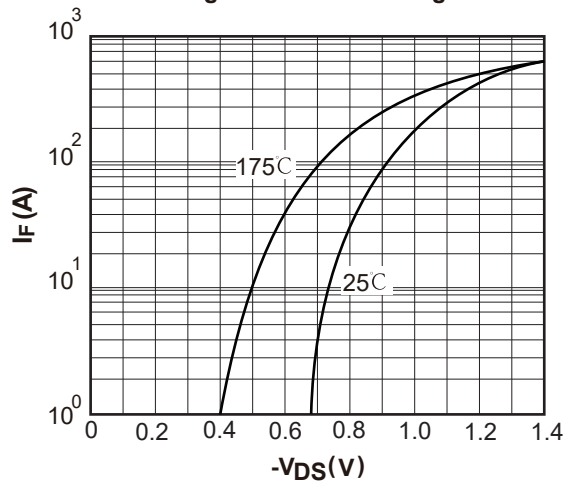
Deain-source breakdown voltage



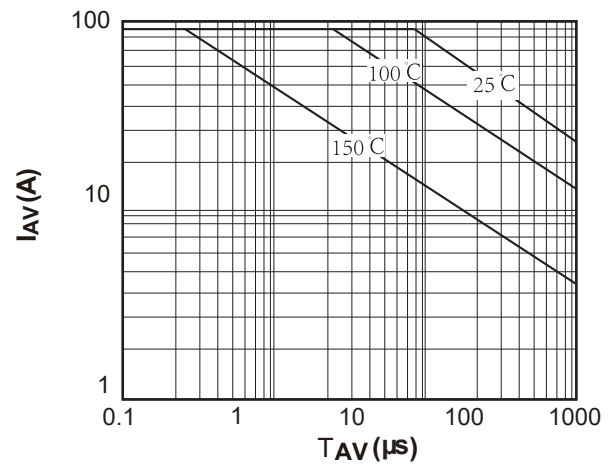
gate threshold voltage



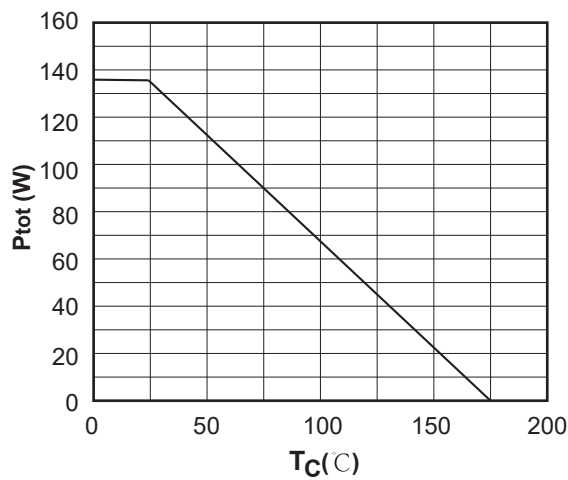
capacitances



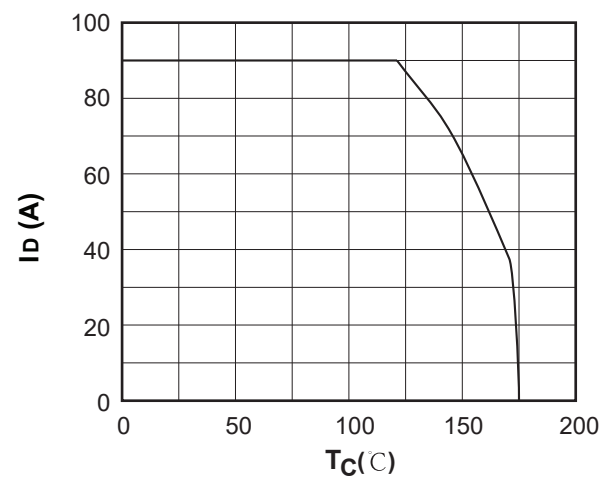
Typical forward diode characteristics



Avalanche characteristics



Power dissipation



Drain current

