CMD30P03/CMU30P03

P-Channel 30-V (D-S) MOSFET

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 suitable for use as a load switch or in PWM applications.

Product Summary

BVDSS	RDSON	ID
-30V	20mΩ	-35A

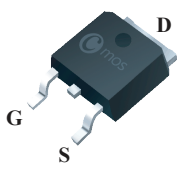
Applications

- DC-DC Converters
- Desktop PCs
- LED controller

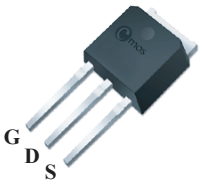
Features

- P-Channel MOSFET
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

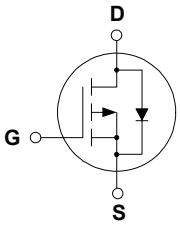
TO-252/251 Pin Configuration



TO-252
(CMD30P03)



TO-251
(CMU30P03)



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±25	V
I_D@T_C=25℃	Continuous Drain Current	-35	A
I_D@T_C=100℃	Continuous Drain Current	-26	A
I_{DM}	Pulsed Drain Current	-105	A
EAS	Single Pulse Avalanche Energy	5	mJ
P_D@T_C=25℃	Total Power Dissipation	42	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	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	3	℃/W

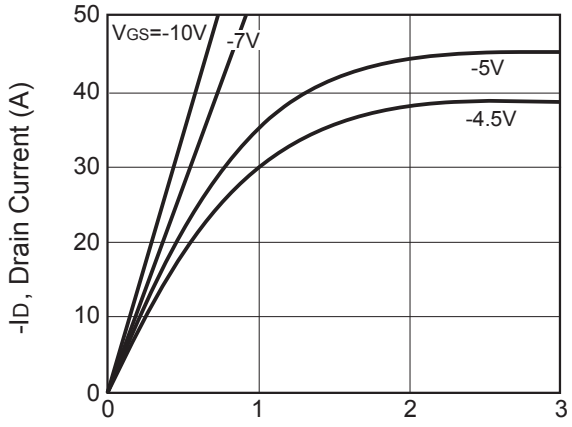
Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-20A	---	---	20	mΩ
		V_{GS}=-4.5V, I_D=-10A	---	---	35	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-20V, V_{GS}=0V , T_J=125℃	---	---	-10	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V, I_D=-20A	---	25	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=15mV, f=1MHz	---	4.5	---	Ω
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-10V , I_D=-20A	---	21	---	nC
Q_{gs}	Gate-Source Charge		---	3.2	---	
Q_{gd}	Gate-Drain Charge		---	5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V, R_G=2.7Ω I_D=-1A	---	10	---	ns
T_r	Rise Time		---	9	---	
$T_{d(off)}$	Turn-Off Delay Time		---	25	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V , f=1MHz	---	1400	---	pF
C_{oss}	Output Capacitance		---	210	---	
C_{rss}	Reverse Transfer Capacitance		---	165	---	

Diode Characteristics

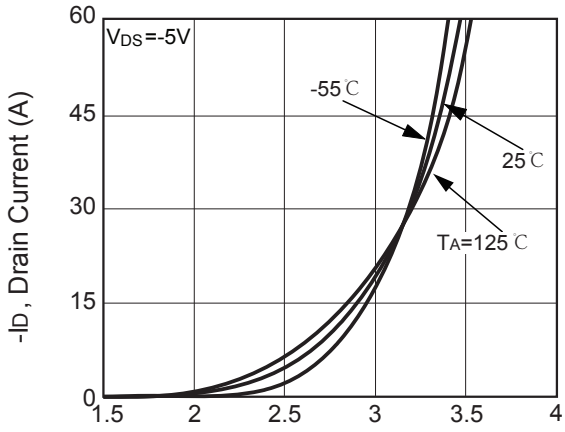
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_{GS}=V_{DS} =0V , Force Current	---	---	-35	A
I_{SM}	Pulsed Source Current		---	---	-105	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-20A ,T_j =25℃	---	---	-1.3	V
t_{rr}	Reverse Recovery Time	I_F =Is, dI$_F$/dt =100 A/μs	---	32	---	ns
Q_{rr}	Reverse Recovery Charge		---	26	---	nC

Typical Characteristics



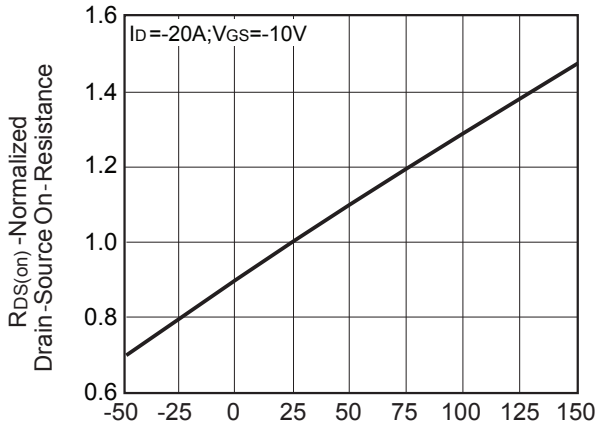
-VDS , Drain-to-Source Voltage (V)

On-Region Characteristics



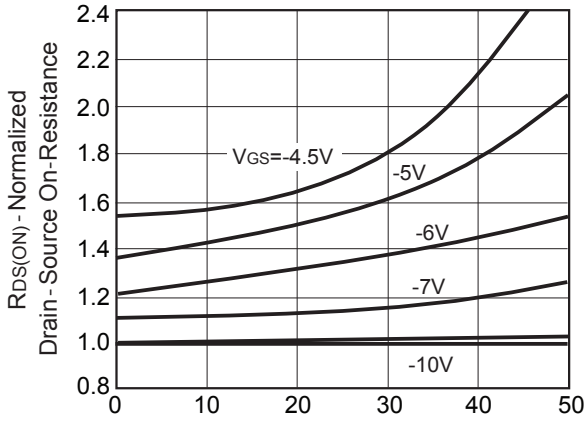
-VGS-Gate-Source Voltage (V)

Transfer Characteristics



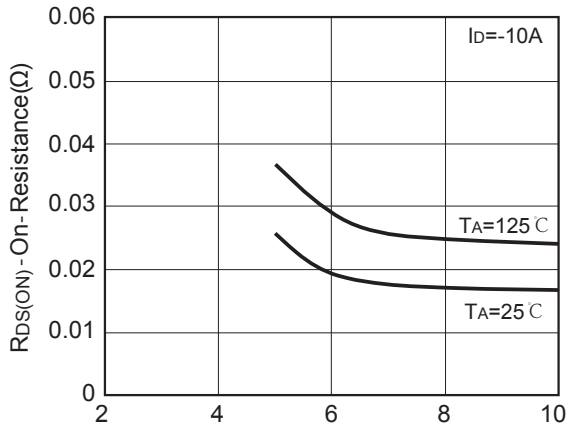
TJ - Junction Temperature (°C)

On-Resistance Variation with Temperature



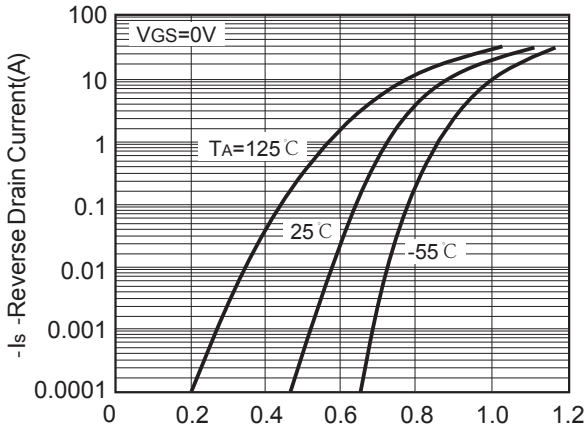
-ID-Drain Current(A)

On-Resistance Variation with Drain Current and Gate Voltage



-VGS-Gate Source Voltage(V)

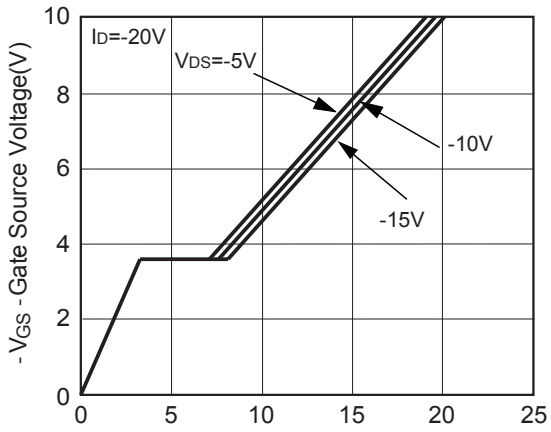
On-Resistance Variation with Gate-Source Voltage



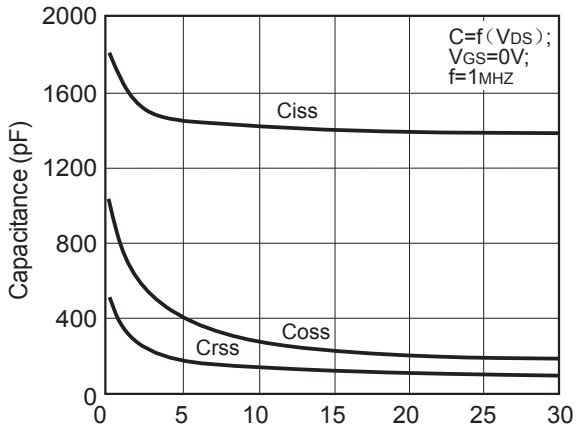
-VSD-Body Diode Forward Voltage(V)

Body Diode Forward Voltage Variation with Source Current and Temperature

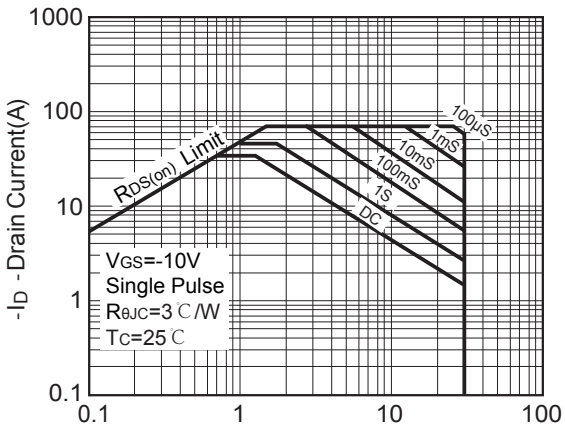
Typical Characteristics



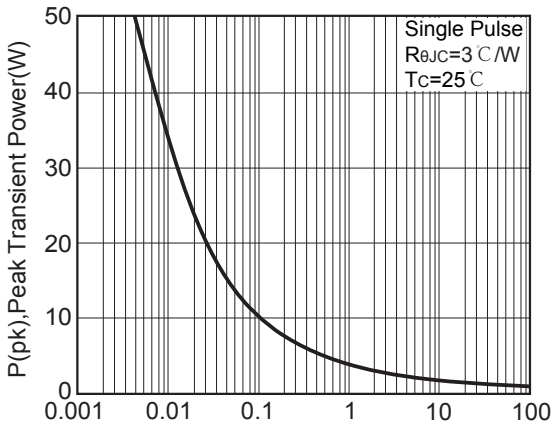
Gate Charge Characteristics



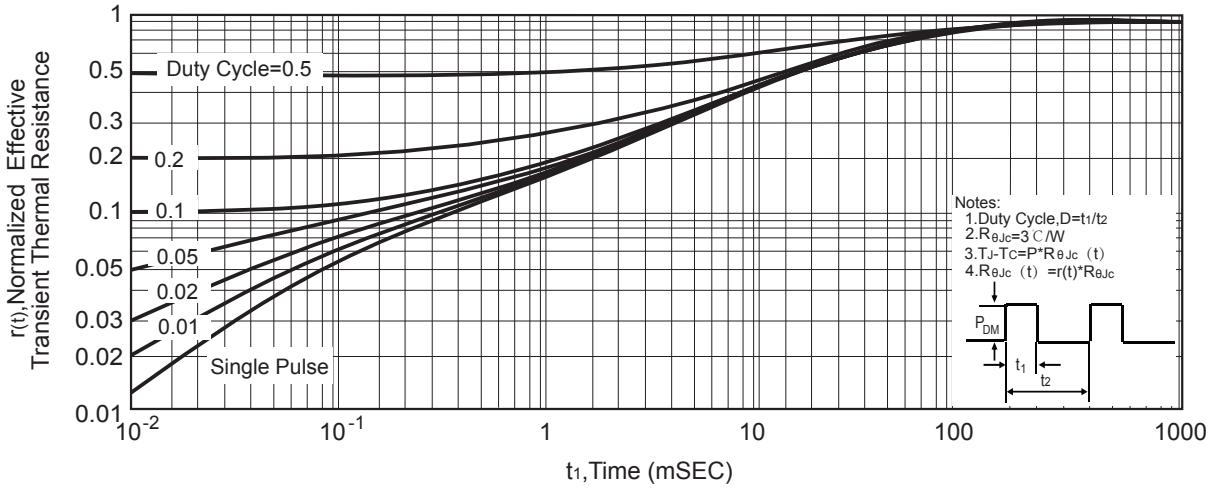
Capacitance Characteristics



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve