CMD40P03/CMU40P03

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	17mΩ	-30A

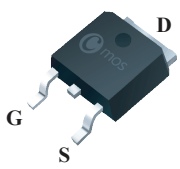
Applications

- DC-DC Converters
- Desktop PCs
- LED controller

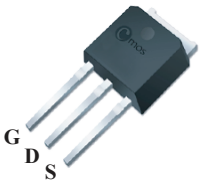
Features

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

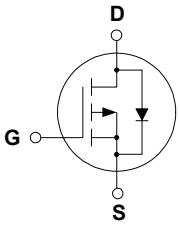
TO-252/251 Pin Configuration



TO-252
(CMD40P03)



TO-251
(CMU40P03)



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℃	Continuous Drain Current[1]	-30	A
I_D@T_C=100℃	Continuous Drain Current[1]	-18	A
I_{DM}	Pulsed Drain Current[2]	-120	A
EAS	Single Pulse Avalanche Energy[3]	144	mJ
P_D@T_C=25℃	Total Power Dissipation	50	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[1]	---	70	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case[1]	---	3.5	℃/W

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

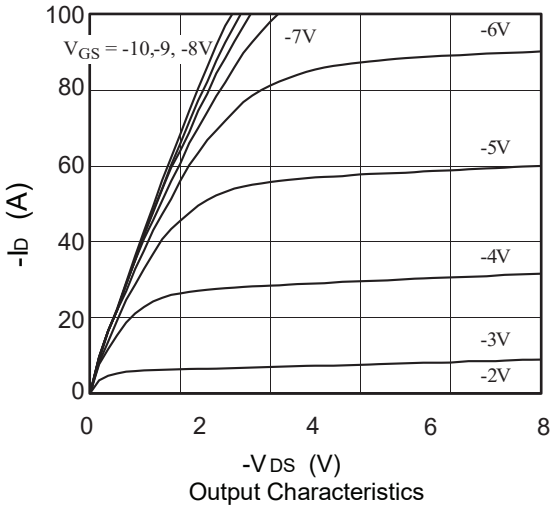
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=-10V, I_D=-15A	---	14.5	17	mΩ
		V_{GS}=-4.5V, I_D=-8A	---	---	37	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-24V, V_{GS}=0V , T_J=150℃	---	---	-25	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-10A	---	23	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	6	---	Ω
Q_g	Total Gate Charge	V_{DS}=-24V, V_{GS}=-4.5V, I_D=-18A	---	14	---	nC
Q_{gs}	Gate-Source Charge		---	3.5	---	
Q_{gd}	Gate-Drain Charge		---	8.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-15V, V_{GS}=-10V, R_G=3.3Ω I_D=-18A	---	14	---	ns
T_r	Rise Time		---	58	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
T_f	Fall Time		---	60	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	1900	---	pF
C_{oss}	Output Capacitance		---	150	---	
C_{rss}	Reverse Transfer Capacitance		---	140	---	

Diode Characteristics

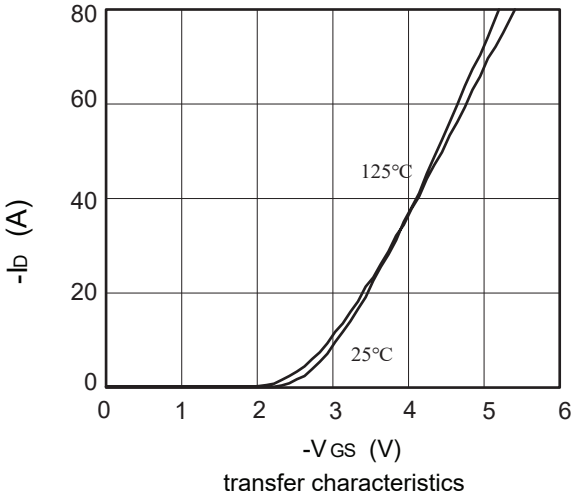
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	-30	A
I_{SM}	Pulsed Source Current[2]		---	---	-120	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-8A	---	---	-1.2	V

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=-25V,V_{GS}=-10V,L=0.5mH,I_D=-24A

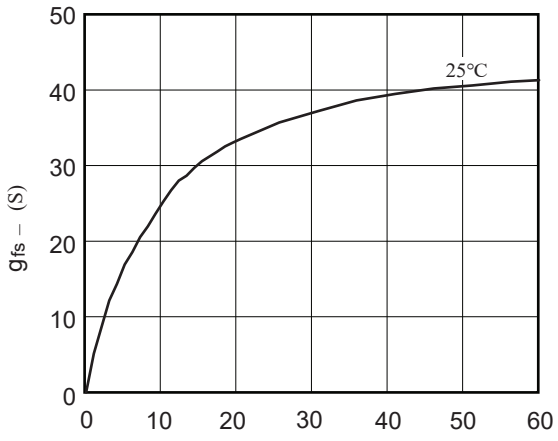
Typical Characteristics



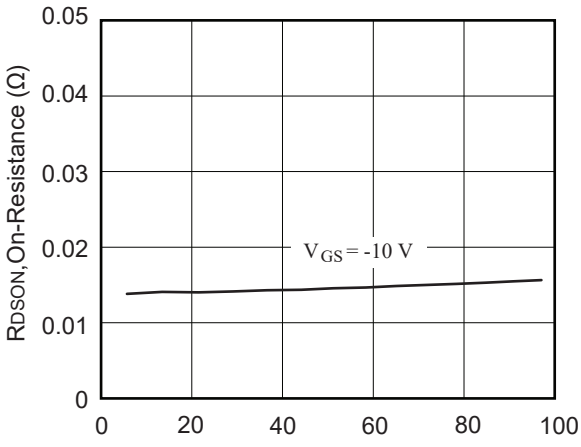
Output Characteristics



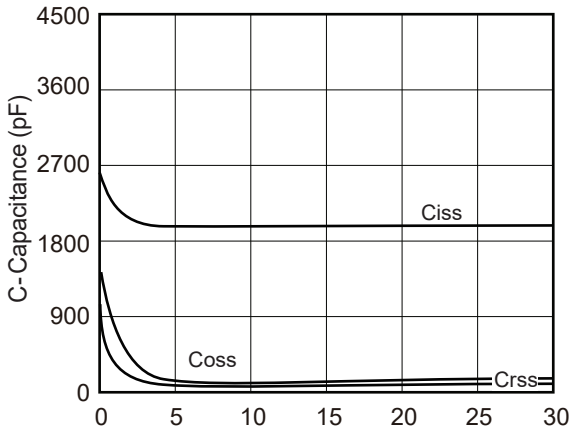
transfer characteristics



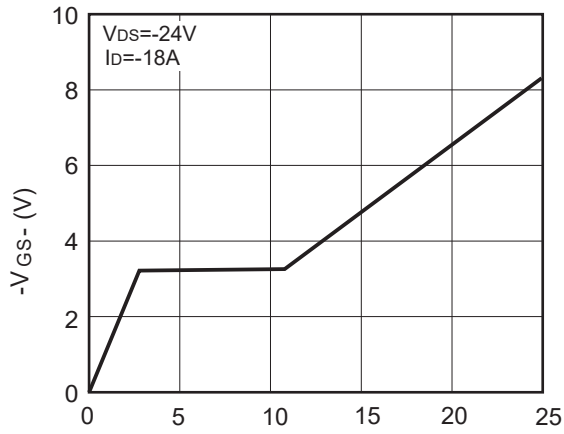
Transconductance



On-Resistance vs.Drain Current

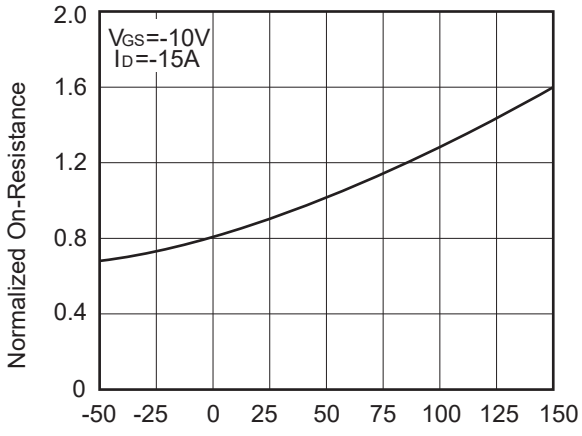


Capacitance Characteristics

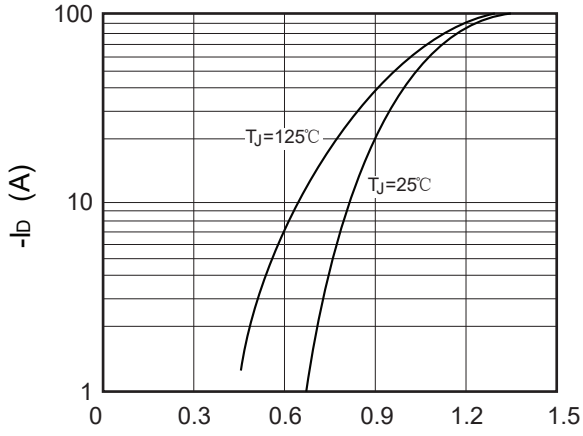


Gate-Charge Characteristics

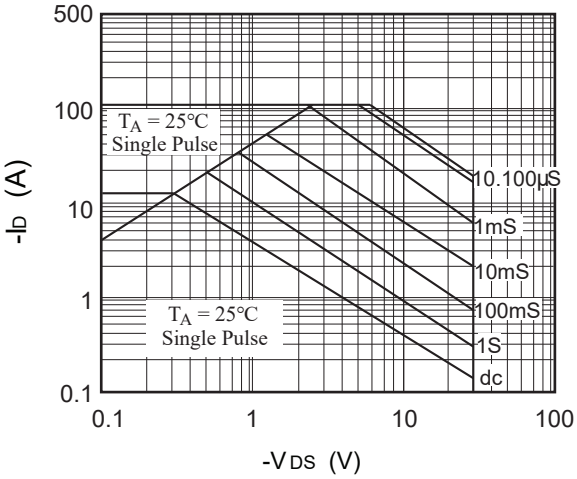
Typical Characteristics



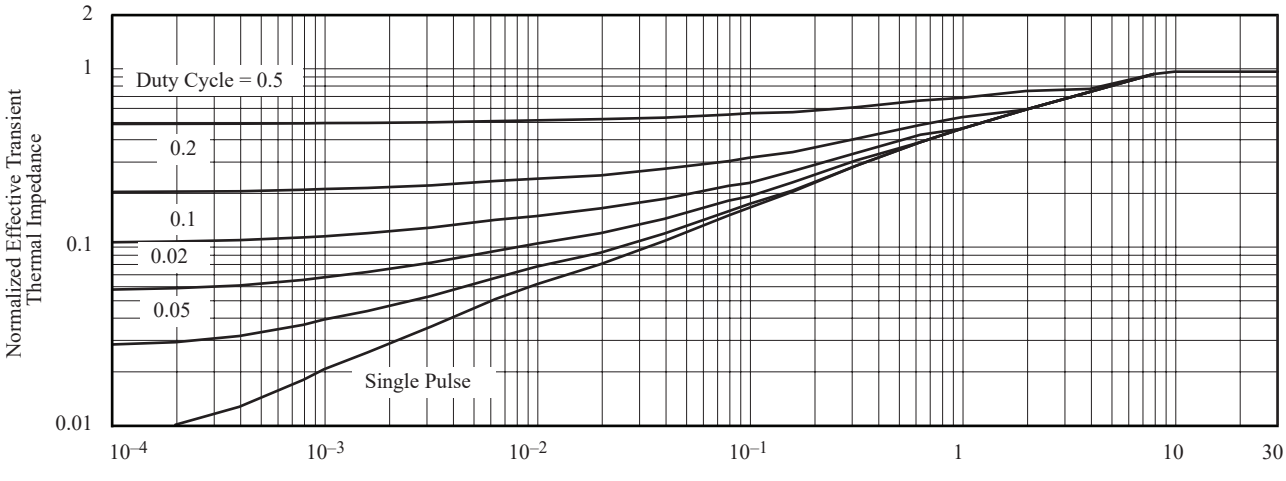
On-Resistance vs. Junction Temperature



Body-Diode Characteristics



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient