CMD450/CMU450

200V N-Channel MOSFET

General Description

The 450 uses advanced trench technology and design to provides low on-state resistance, high switching performance and excellent quality. These devices are well suited for SMPS, HID and general purpose applications.

Features

- Advanced Process Technology
- Dynamic dv/dt Rating
- 175°C Operating Temperature
- Fast Switching
- Fully Avalanche Rated
- Simple Drive Requirements

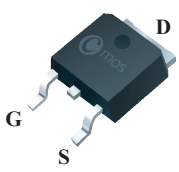
Product Summary

BVDSS	RDSON	ID
200V	700mΩ	4A

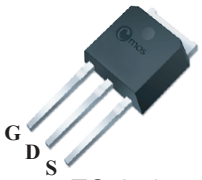
Applications

- LED TV
- Switch mode power supplies (SMPS)
- DC-DC Converters

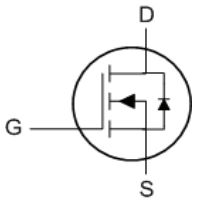
TO-252/251 Pin Configuration



TO-252



TO-251



Type	Package	Marking
CMD450	TO-252	CMD450
CMU450	TO-251	CMU450

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate-Source Voltage	±30	V
I_D@T_C=25°C	Continuous Drain Current	4	A
I_D@T_C=100°C	Continuous Drain Current	3	A
I_{DM}	Pulsed Drain Current	12	A
EAS	Single Pulse Avalanche Energy	5	mJ
P_D@T_C=25°C	Total Power Dissipation	25	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	---	60	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	6	°C/W

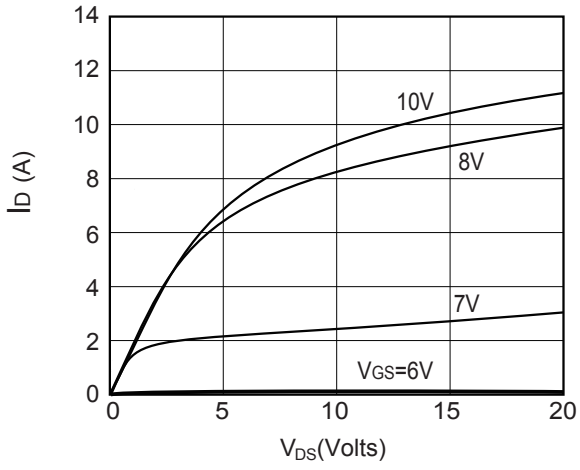
Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=1mA	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=3.8A	---	---	700	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	3	---	6	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=160V , V_{GS}=0V	---	---	1	uA
		V_{DS}=160V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{GS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V, I_D=3.8A	---	3.3	---	S
Q_g	Total Gate Charge	V_{DS}=25V, V_{GS}=10V, I_D=4A	---	4	---	nC
Q_{gs}	Gate-Source Charge		---	1.52	---	
Q_{gd}	Gate-Drain Charge		---	1.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=25V V_{GS}=10V R_L=6.5Ω ,R_{GEN}=3Ω	---	6	---	ns
T_r	Rise Time		---	4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	10	---	
T_f	Fall Time		---	3	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	250	---	pF
C_{oss}	Output Capacitance		---	35	---	
C_{rss}	Reverse Transfer Capacitance		---	7	---	

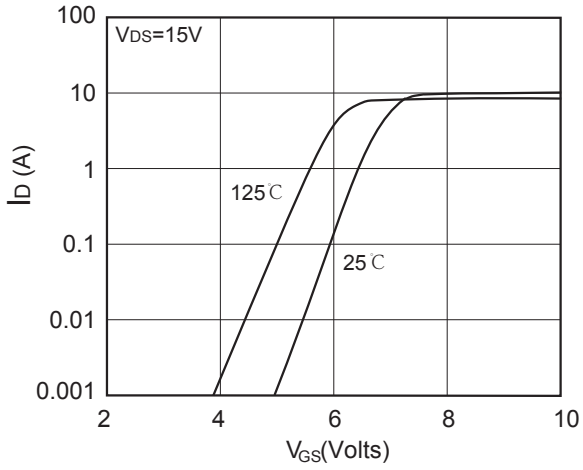
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	4	A
I_{SM}	Pulsed Source Current		---	---	12	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V

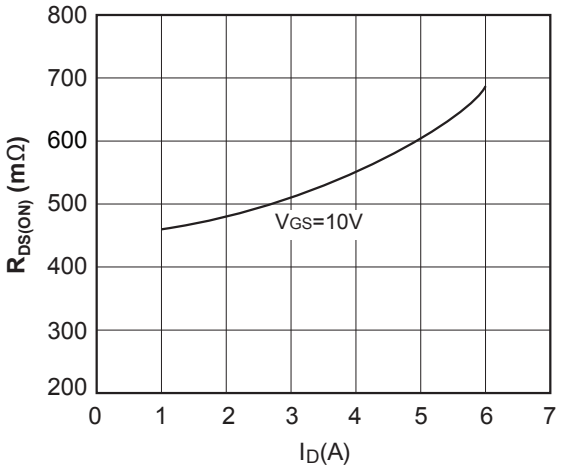
Typical Characteristics



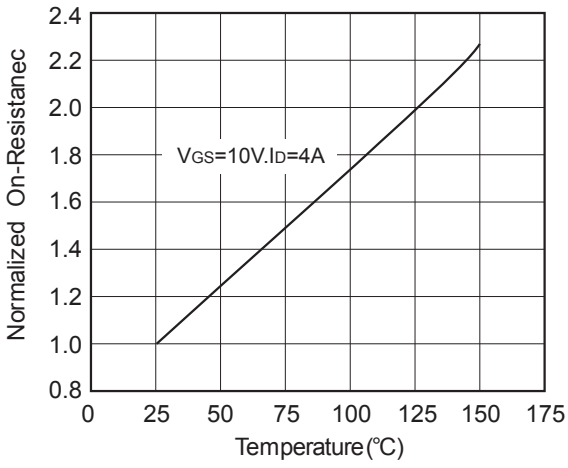
On-Region Characteristics



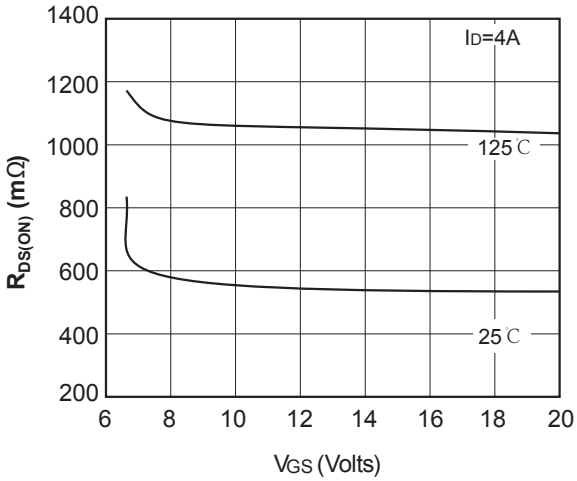
Transfer Characteristics



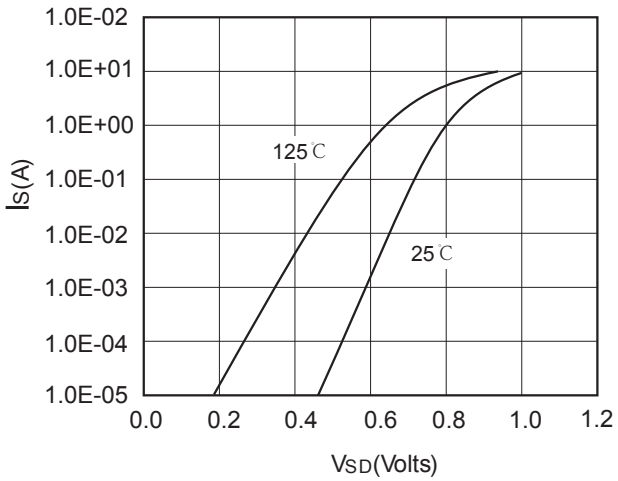
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Junction Temperature

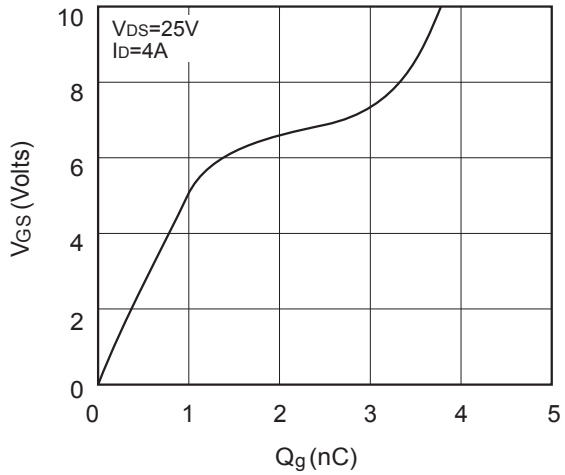


On-Resistance vs. Gate-Source Voltage

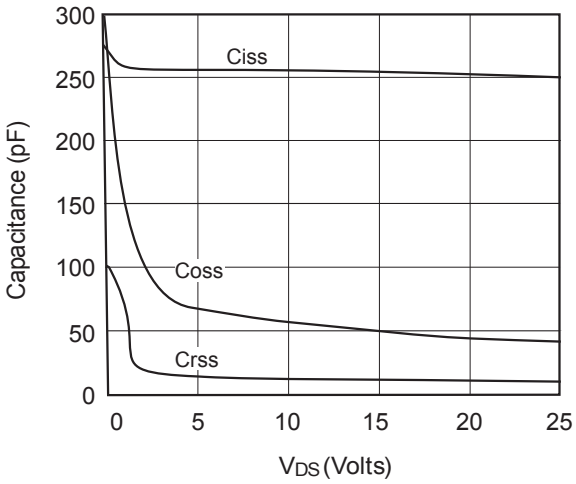


Body-Diode Characteristics

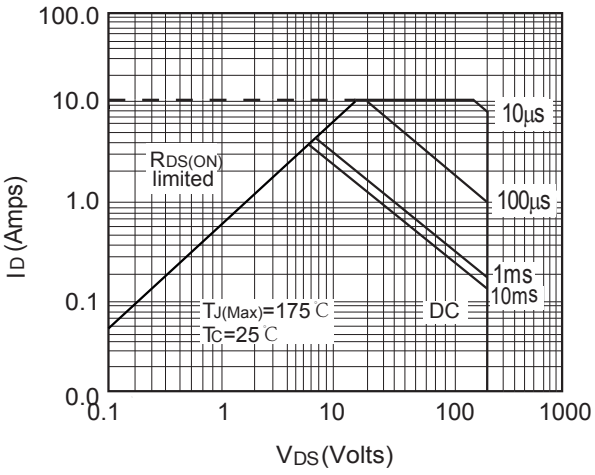
Typical Characteristics



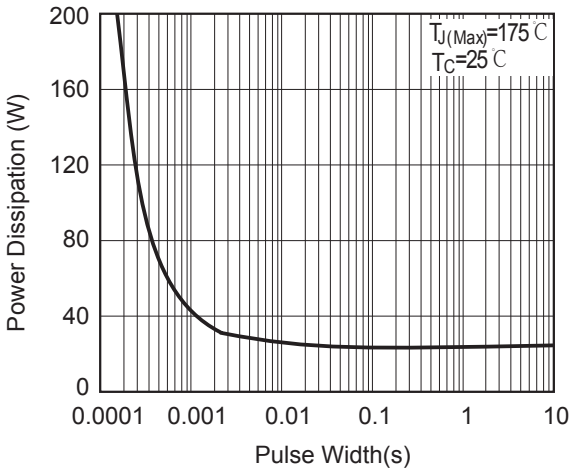
Gate-Charge Characteristics



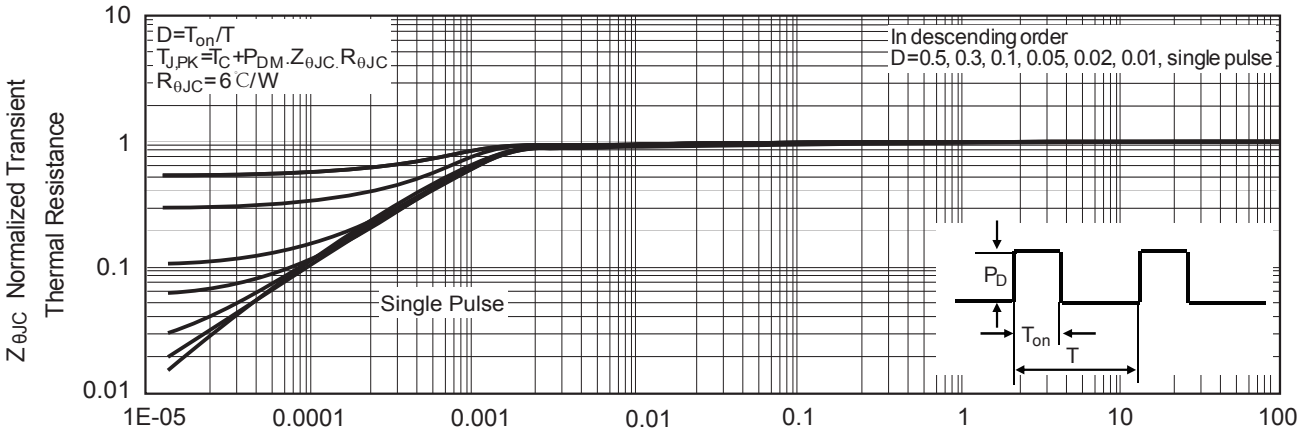
Capacitance Characteristics



Maximum Forward Biased Safe Operating Area

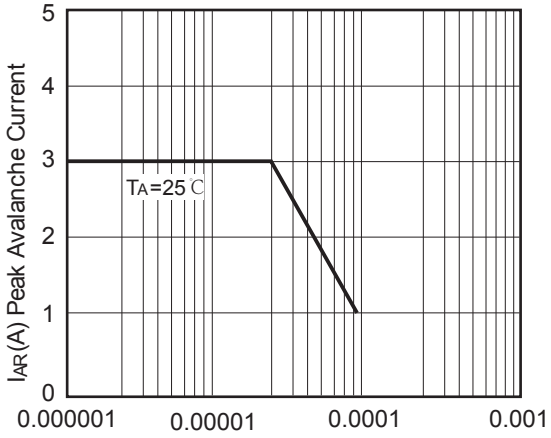


Single Pulse Power Rating Junction-to-Case

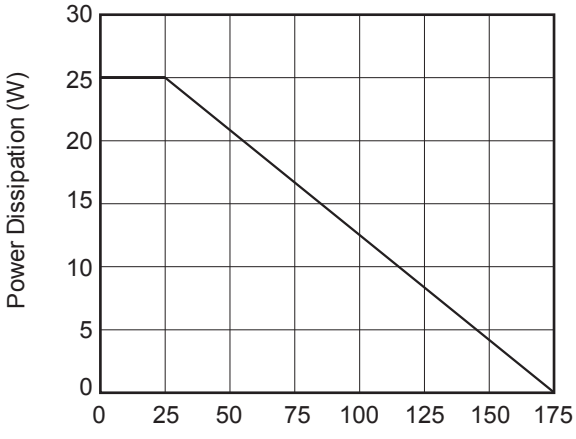


Normalized Maximum Transient Thermal Impedance

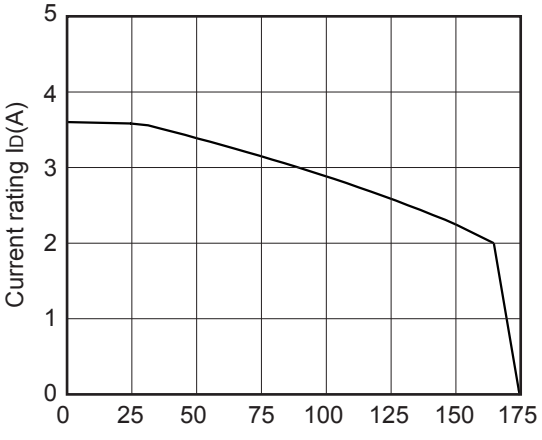
Typical Characteristics



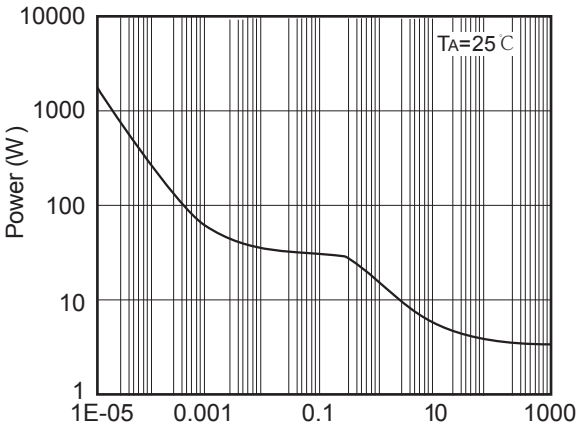
Single Pulse Avalanche capability



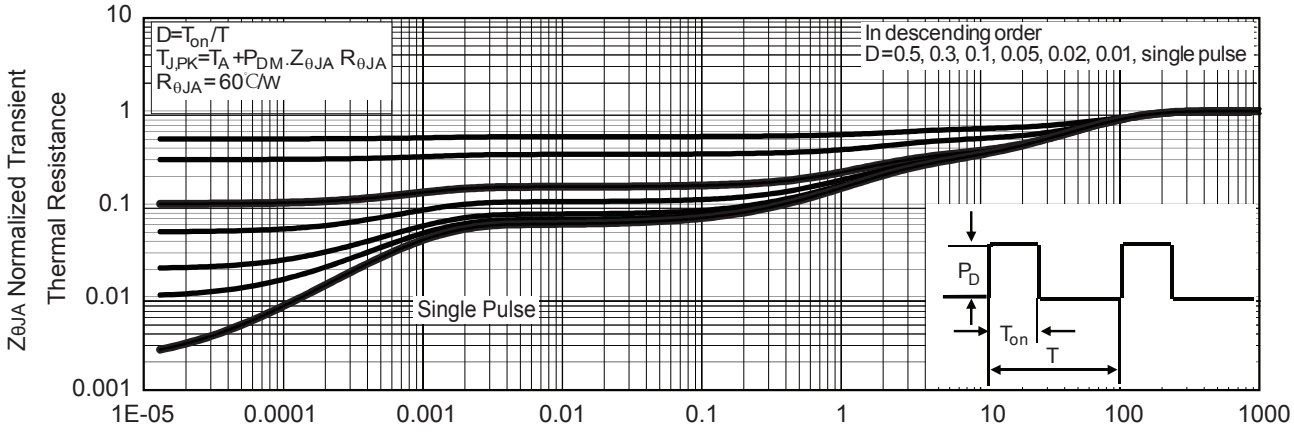
Power De-rating



Current De-rating



Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance