CMD7N65/CMU7N65

650V N-Channel MOSFET

General Description

The 7N65 have been fabricated using an advanced high voltage MOSFET process that is designed to deliver high levels of performance and robustness in popular AC-DC applications.

Product Summary

BVDSS	RDSON	ID
650V	1.45Ω	7A

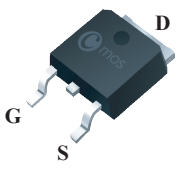
Features

- 7.0A, 650V, RDS (on) = 1.45 Ω @VGS = 10 V
- 100% Avalanche Tested
- Improved dv/dt capability

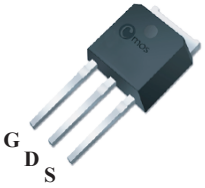
Applications

- Power Supply
- PFC
- Ballast

TO-252/251 Pin Configuration



TO-252
(CMD7N65)



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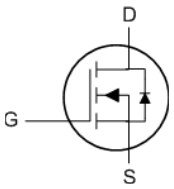

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current - Continuous (T_C = 25°C) [1]	7	A
	- Continuous (T_C = 100°C) [1]	4.3	A
I_{DM}	Drain Current - Pulsed [2]	28	A
V_{GSS}	Gate-Source Voltage	± 30	V
I_{AR}	Avalanche Current	3.1	A
P_D	Power Dissipation (T_C = 25°C) [3]	180	W
E_{AS}	Avalanche energy [5]	380	mJ
T_J, T_{STG}	Operating and Storage Temperature Range	-50 to +150	°C
T_L	Maximum lead temperature for soldering purposes, 1/8 from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max. [1]	0.7	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max. (Steady State) [1]	55	°C/W

Electrical Characteristic

T_C = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	650	--	--	V
$\triangle BV_{DSS}$ /$\triangle T_J$	Zero Gate Voltage Drain Current	I_D= 250μA , V_{GS} = 0 V	--	0.67	--	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 520 V, T_J = 125 ℃	--	--	10	
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} =±30 V, V_{DS} = 0 V	--	--	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	3	--	5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 4A	--	--	1.45	Ω
g_{FS}	Forward Transconductance	V_{DS} = 15 V, I_D =4 A	--	6	--	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V V_{GS} = 0 V f = 1.0 MHz	--	1400	--	pF
C_{oss}	Output Capacitance		--	85	--	pF
C_{rss}	Reverse Transfer Capacitance		--	8	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 325 V ， V_{GS}=10V I_D = 7A R_G = 25Ω	--	26	--	ns
t_r	Turn-On Rise Time		--	44	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	53	--	ns
t_f	Turn-Off Fall Time		--	33	--	ns
Q_g	Total Gate Charge	V_{DS} = 520V I_D = 7A V_{GS} = 10 V	--	20	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge		--	8.5	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current [1,4]		--	--	7	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current [2,4]		--	--	28	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 7.5A[2]	--	--	1.2	V
t_{rr}	Reverse Recovery Time	I_F = 7A, V_{DS} = 100 V dI / dt = 100 A/μs	--	365	--	ns
Q_{rr}	Reverse Recovery Charge		--	4.3	--	nC

Notes:

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3.The power dissipation is limited by 150 ℃ junction temperature.
4.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.
5.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=5mH,I_D=12.5A