CMD7N65A/CMU7N65A

650V, 1.1Ω typ., 7A N-Channel MOSFET

General Description

This Power MOSFET is produced using Cmos's advanced planar stripe DMOS technology.These devices are well suited for high efficiency switched mode power supplies,active power factor correction, electronic lamp ballasts based on half bridge topology.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	1.3Ω	7A

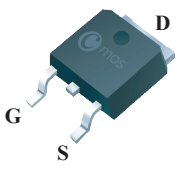
Applications

- Adaptor
- Power Supply
- High Current, High Speed Switching

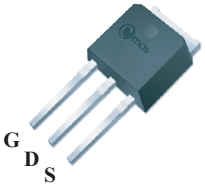
Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

TO-252/251 Pin Configuration



TO-252
(CMD7N65A)



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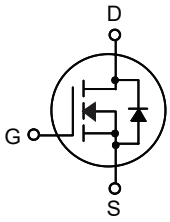
(CMU7N65A)



Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current - Continuous (T_C = 25°C)	7	A
	- Continuous (T_C = 100°C)	4.2	A
I_{DM}	Drain Current - Pulsed [1]	28	A
V_{GSS}	Gate-Source Voltage	± 30	V
dv/dt	Peak Diode Recovery dv/dt [2]	4.5	V/ns
P_D	Power Dissipation (T_C = 25°C)	100	W
E_{AS}	Avalanche energy [3]	735	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	1.25	℃/W
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink Typ.	0.5	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	℃/W

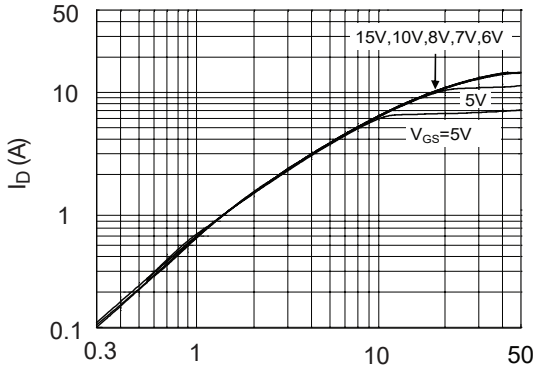
Electrical Characteristic (Tc=25℃ unless otherwise noted)

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
$\triangle BV_{DSS}$ /$\triangle T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, Referenced to 25℃	--	0.8	--	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 520 V, T_C =125℃	--	--	10	
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	nA
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	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 3.5A	--	1.1	1.3	Ω
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	--	3	--	Ω
gfs	Forward Transconductance	V_{DS}=20V,I_D=3.5A	--	8	--	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	1100	--	pF
C_{oss}	Output Capacitance		--	105	--	pF
C_{rss}	Reverse Transfer Capacitance		--	10	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 325 V, I_D =7A R_G = 25Ω (note:4,5)	--	20	--	ns
t_r	Turn-On Rise Time		--	50	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	90	--	ns
t_f	Turn-Off Fall Time		--	55	--	ns
Q_g	Total Gate Charge	V_{DS} = 520 V, I_D = 7A V_{GS} = 10 V (note:4,5)	--	24	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge		--	9	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	7	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	28	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 7A	--	0.87	1.4	V

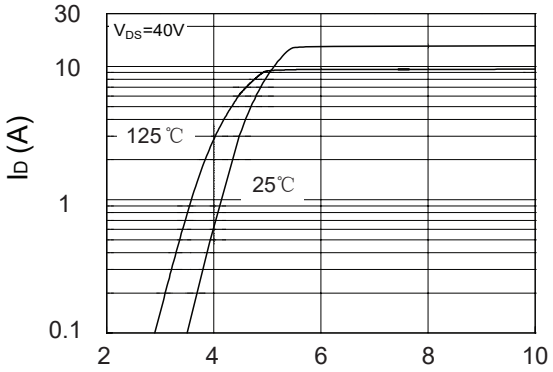
note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. I_{SD}≤7A, di/dt≤200A/μs, V_{DD}≤BV_{DSS}, Starting T_J = 25℃.
3. The EAS data shows Max. rating . The test condition is V_{DD}=80V , V_{GS}=10V , L=30mH , I_{AS}=7A.
4. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
5. Essentially independent of operating temperature.

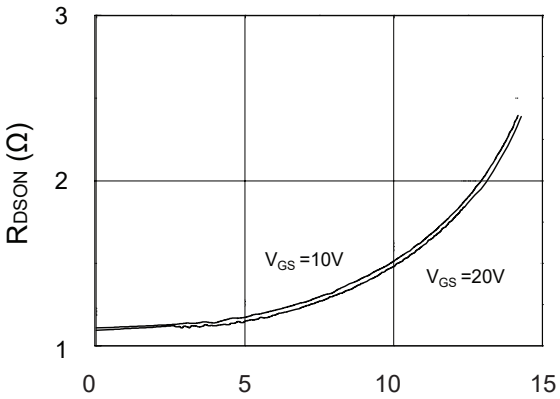
Typical Characteristics



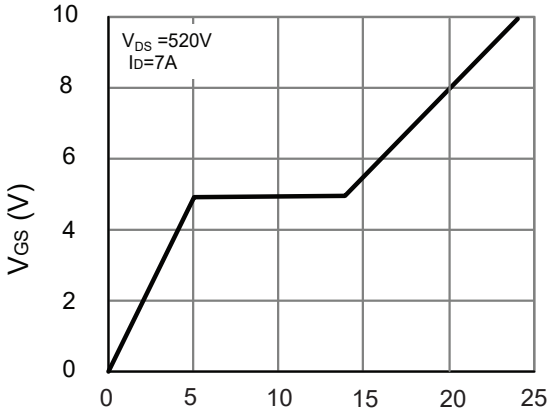
Output Characteristics



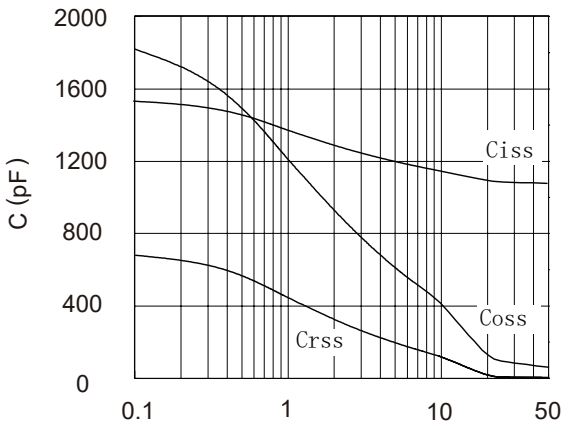
transfer characteristics



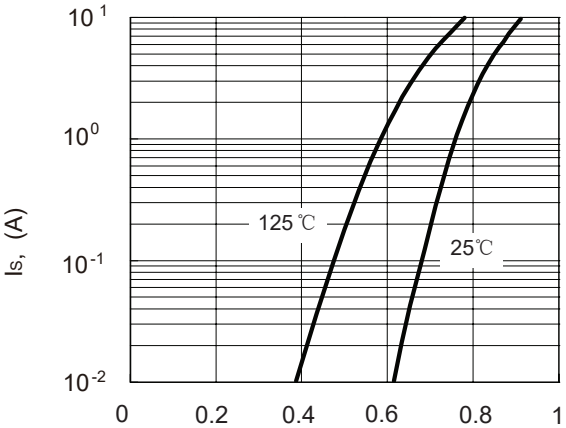
drain-source on-resistance



Gate charge vs gate-source voltage

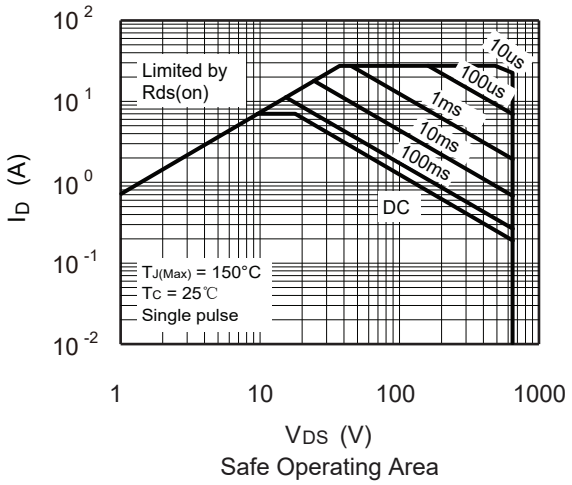


Capacitance Characteristics



Body-Diode Characteristics

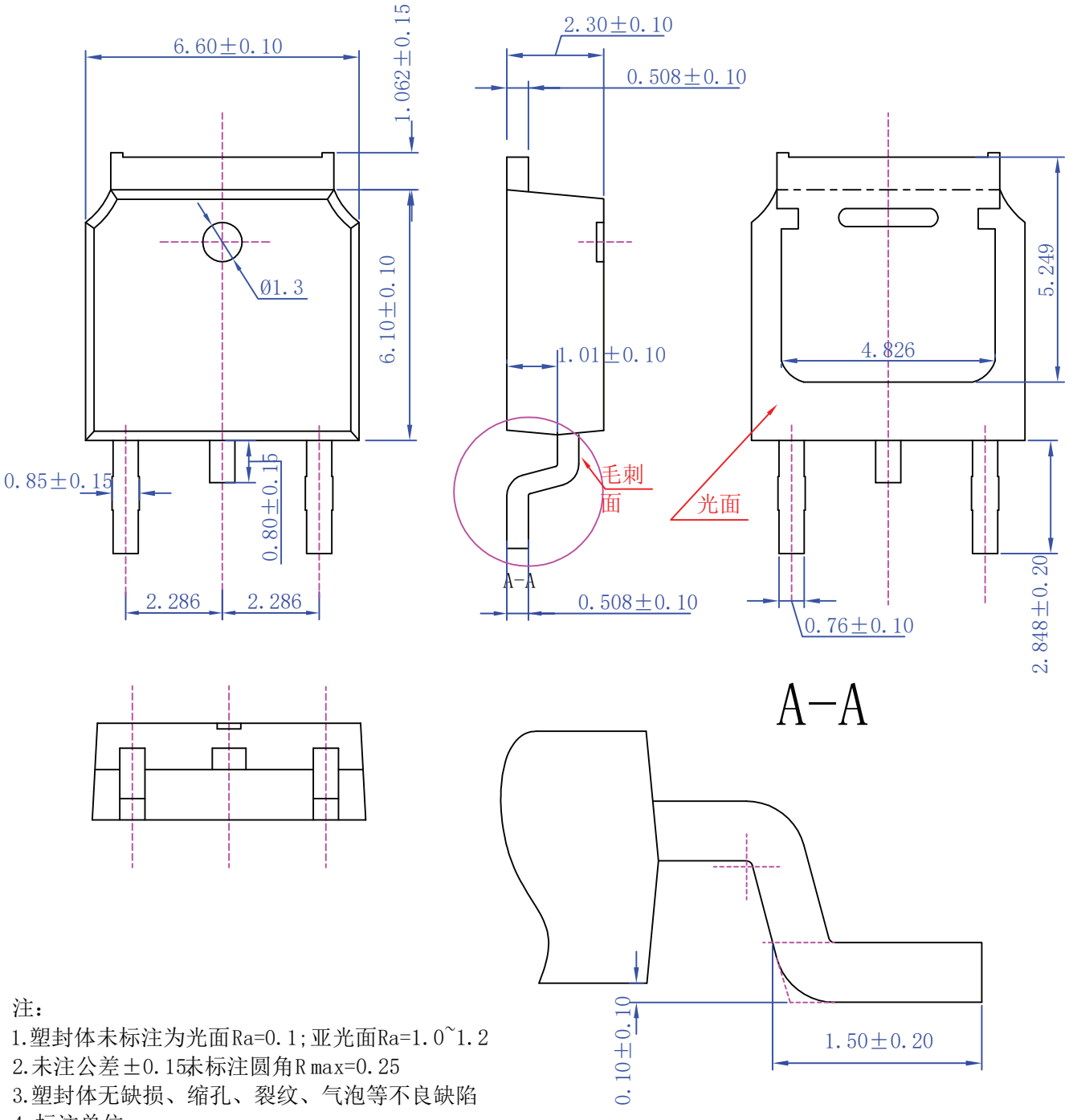
Characteristics



Safe Operating Area

Package Dimension

TO-252 Unit :mm



注：

1.塑封体未标注为光面Ra=0.1;亚光面Ra=1.0~1.2
2.未注公差±0.15未标注圆角R max=0.25
3.塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
4.标注单位mm
5.顶针孔不允许凸出塑封体表面

Package Dimension

TO-251A Unit :mm