

CMD9N25/CMU9N25

250V, 0.34Ω typ., 9A N-Channel MOSFET

General Description

The 9N25 uses advanced planar stripe DMOS technology and design to provide excellent RDS(ON) .

This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Features

- Fast Switching
- 100% avalanche tested
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	250	V
V_{GS}	Gate-Source Voltage	±30	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	9	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	7	A
I_{DM}	Pulsed Drain Current	36	A
EAS	Single Pulse Avalanche Energy ¹	281	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	96	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	85	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.30	°C/W

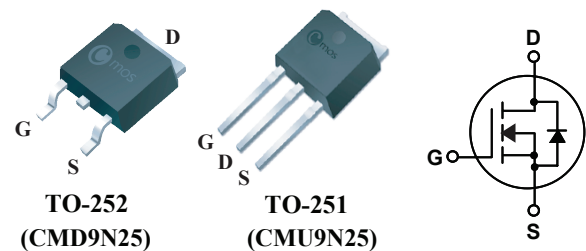
Product Summary

BVDSS	RDS(on) max.	ID
250V	0.38Ω	9A

Applications

- PWM Motor Controls
- LED TV
- DC-DC Converters

TO-252/251 Pin Configuration



Electrical Characteristics(T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	250	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =3A	---	0.34	0.38	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	2.0	---	4.0	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =200V, V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±30V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	---	6	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	3.4	---	Ω
Q _g	Total Gate Charge	I _D =9A	---	21	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =200V	---	4	---	
Q _{gd}	Gate-Drain Charge	V _{GS} =10V	---	9	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =125V V _{GS} =10V R _G =25Ω, I _D =9A	---	8	---	ns
T _r	Rise Time		---	32	---	
T _{d(off)}	Turn-Off Delay Time		---	51	---	
T _f	Fall Time		---	31	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	600	---	pF
C _{oss}	Output Capacitance		---	105	---	
C _{rss}	Reverse Transfer Capacitance		---	22	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	9	A
I _{SM}	Pulsed Source Current		---	---	36	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =8A	---	0.93	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =8A	---	178	---	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	---	1.16	---	μC

Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=80V, V_{GS}=10V, L=10mH, I_{AS}=7.5A.

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

Typical Characteristics

Fig. 1 $I_D - V_{DS}$

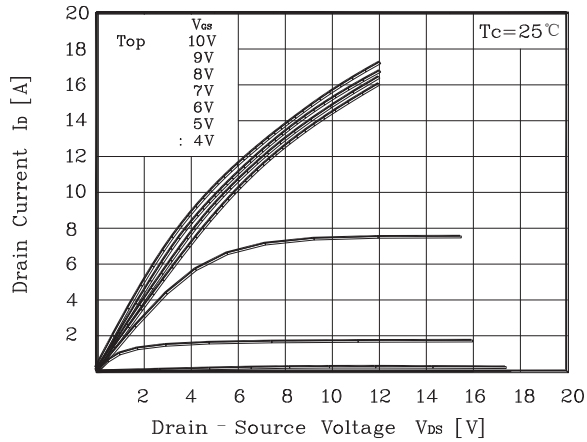


Fig. 2 $I_D - V_{GS}$

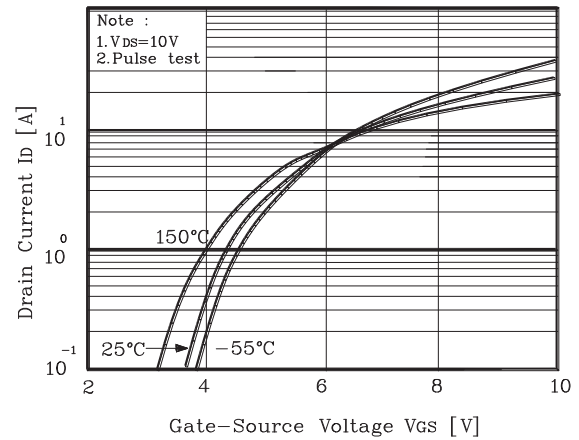


Fig. 3 $R_{DS(on)} - I_D$

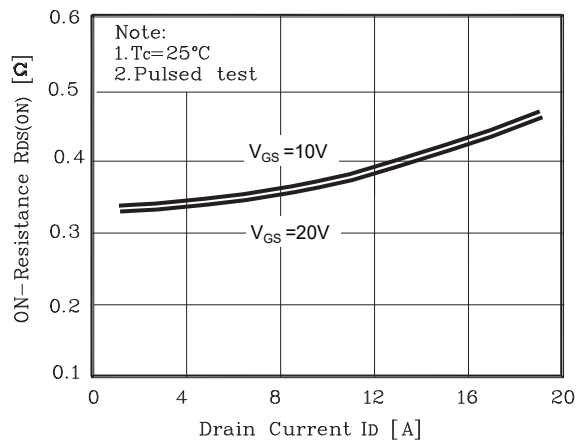


Fig. 4 $I_S - V_{SD}$

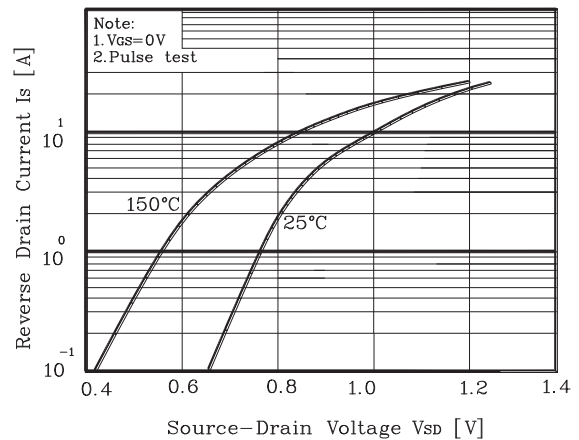


Fig. 5 Capacitance - V_{DS}

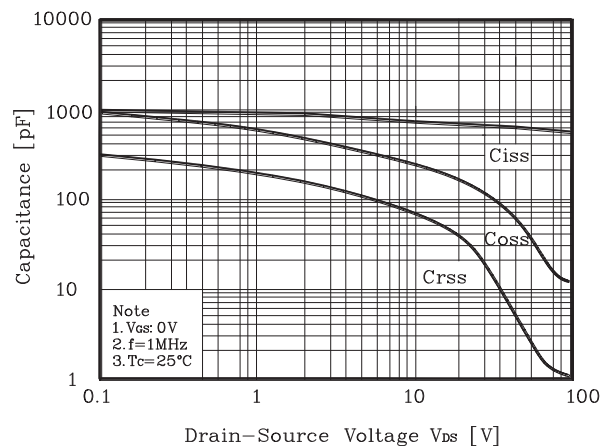
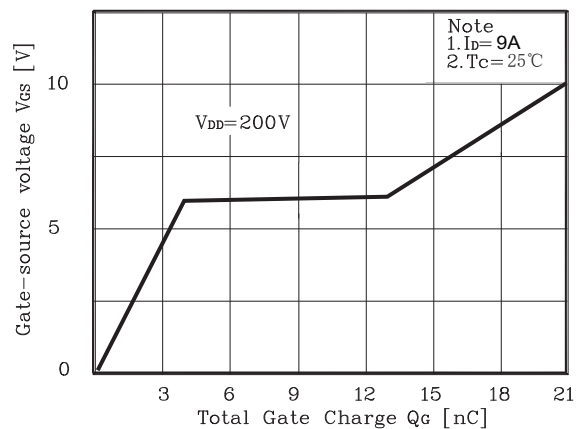


Fig. 6 $V_{GS} - Q_G$



Typical Characteristics

Fig. 7 $V_{DS} - T_J$

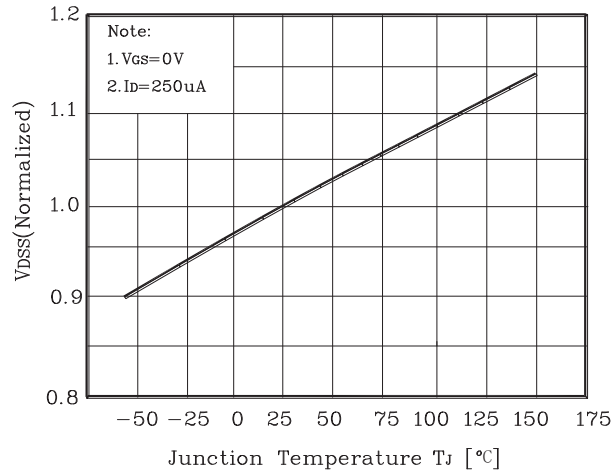


Fig. 8 $R_{DS(on)} - T_J$

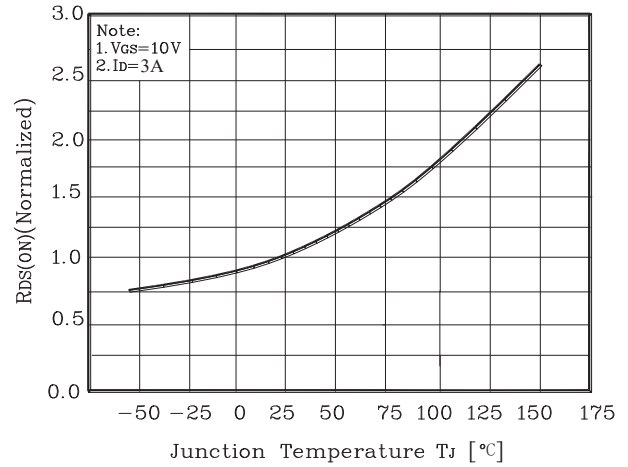
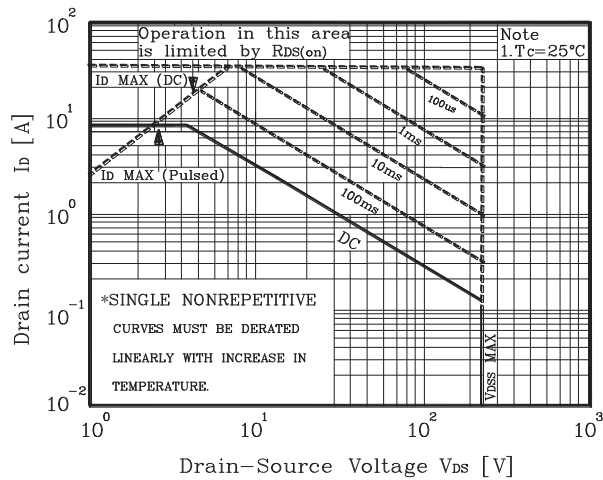


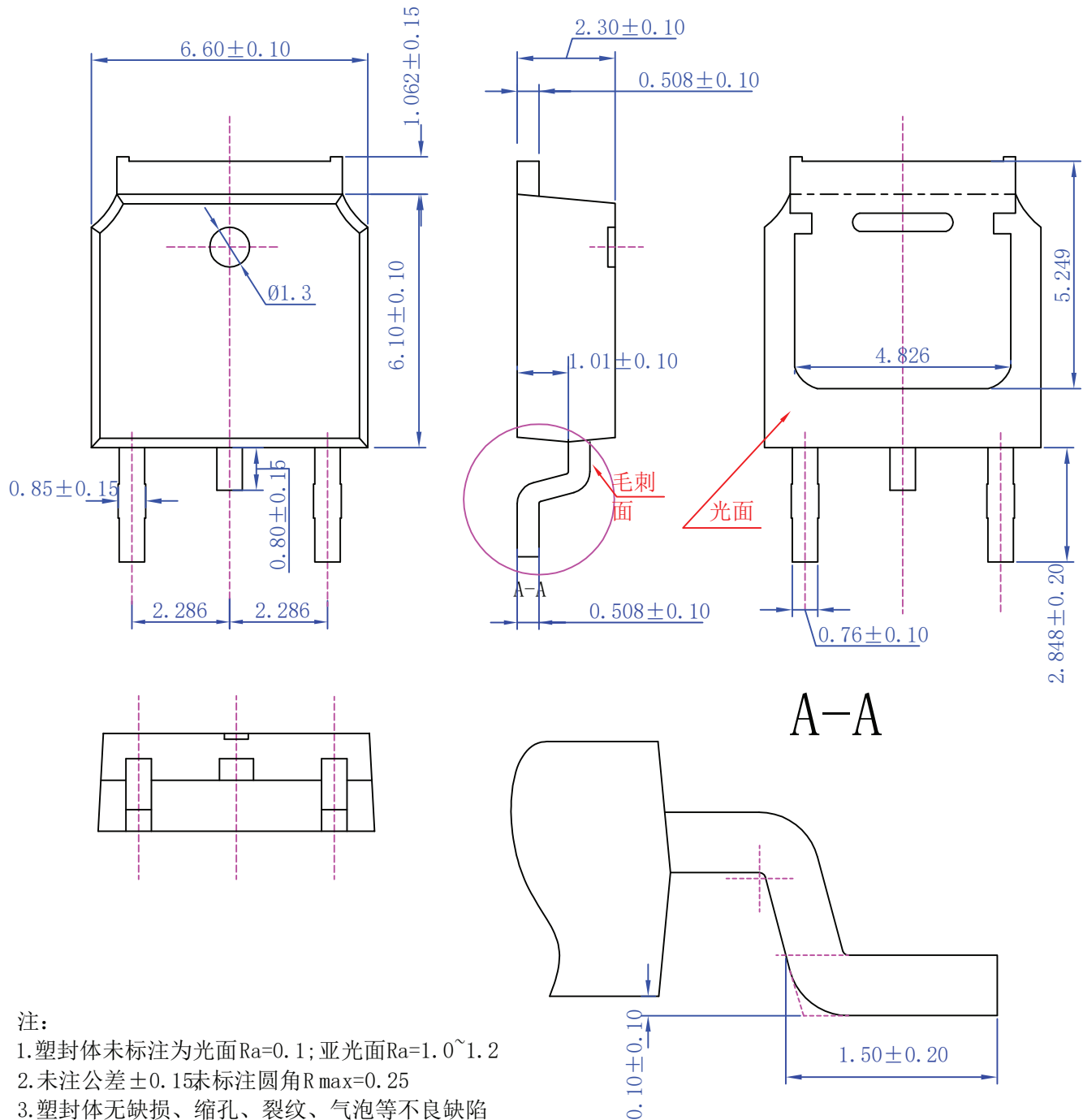
Fig. 9 Safe Operating Area



Package Dimension

TO-252

Unit :mm



Package Dimension

TO-251A

Unit :mm

