

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.

Features

- Fast switching speed
- Lower On-resistance
- 100% EAS Guaranteed
- Simple Drive Requirement

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	-18	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	-12.5	A
I_{DM}	Pulsed Drain Current	-72	A
EAS	Single Pulse Avalanche Energy ¹	66	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	40	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	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.1	°C/W

Product Summary

BVDSS	RDS(on) max.	ID
-100V	190mΩ	-18A

Applications

- DC-DC Converters
- LCD Display inverter
- Power Management in Note book

TO-252/251 Pin Configuration



Type	Package	Marking
CMD5931	TO-252	CMD5931
CMU5931	TO-251	CMU5931

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 =-250uA	-100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-6A	---	170	190	mΩ
		V _{GS} =-4.5V, I _D =-3A	---	173	200	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-100V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-100V, V _{GS} =0V, T _J =125°C	---	---	-100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-6A	---	14	---	S
Q _g	Total Gate Charge	V _{DS} =-80V, I _D =-8A V _{GS} =4.5V	---	17	---	nC
Q _{gs}	Gate-Source Charge		---	5	---	
Q _{gd}	Gate-Drain Charge		---	9	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =-50V, V _{GS} =-10V, R _G =3.3Ω I _D =-8A	---	10	---	ns
T _r	Rise Time		---	15	---	
T _{d(off)}	Turn-Off Delay Time		---	46	---	
T _f	Fall Time		---	42	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	1450	---	pF
C _{oss}	Output Capacitance		---	40	---	
C _{rss}	Reverse Transfer Capacitance		---	25	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	-18	A
I _{SM}	Pulsed Source Current		---	---	-72	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-12A	---	-0.95	-1.2	V

Note :

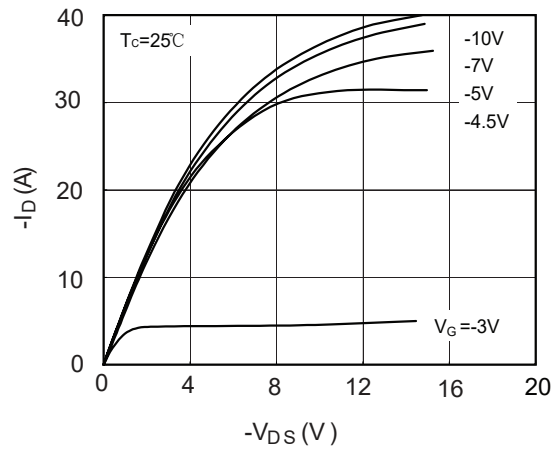
1.The EAS data shows Max. rating . The test condition is V_{DD}=-50V, V_{GS}=-10V, L=1mH, I_{AS}=-11.5A.

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

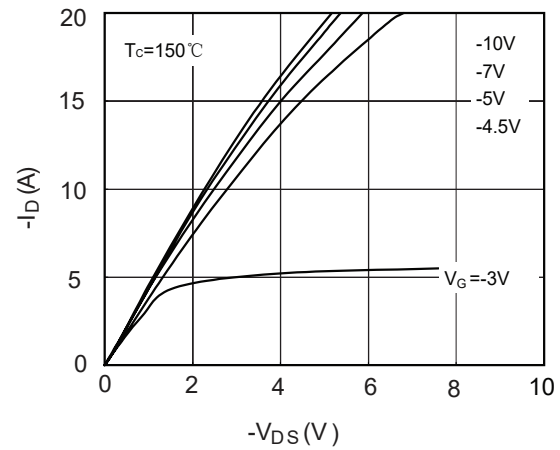
Cmos assumes no liability for customers' product design or applications.

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

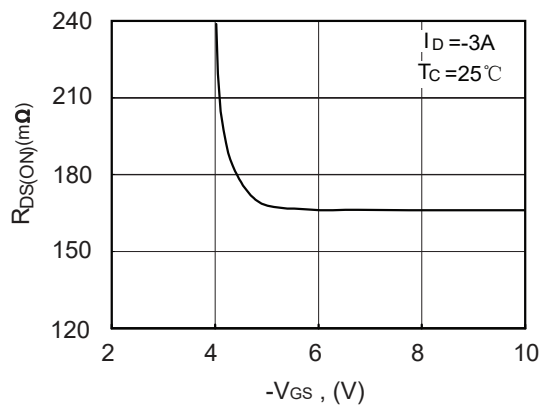
Typical Characteristics



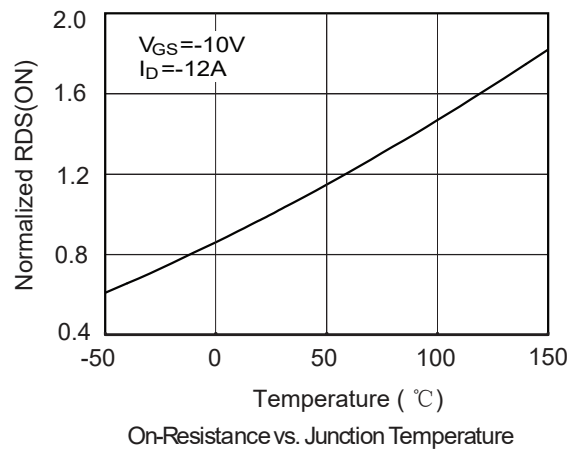
Output Characteristics



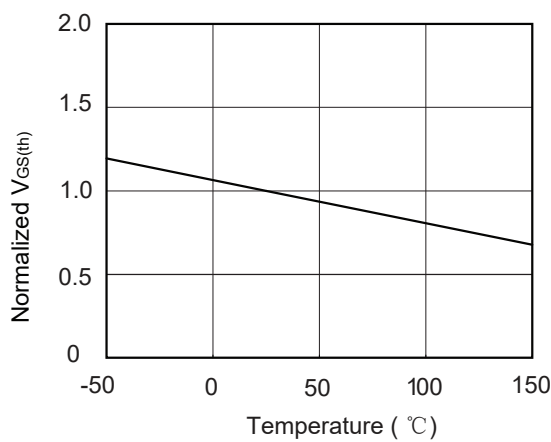
Output Characteristics



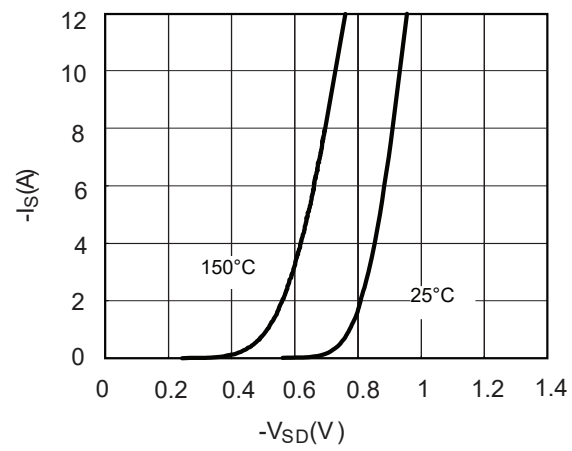
On-Resistance v.s. Gate Voltage



On-Resistance vs. Junction Temperature

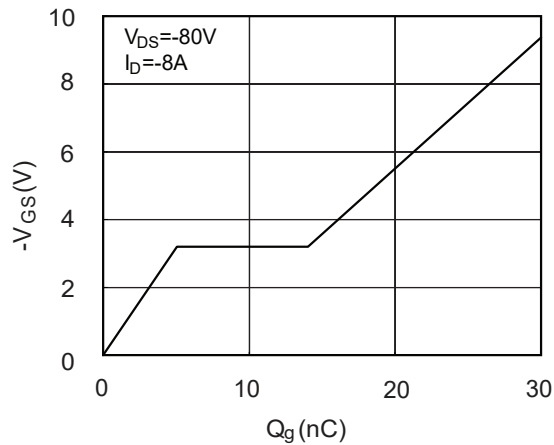


Gate Threshold Voltage v.s. Reverse Diode Junction Temperature

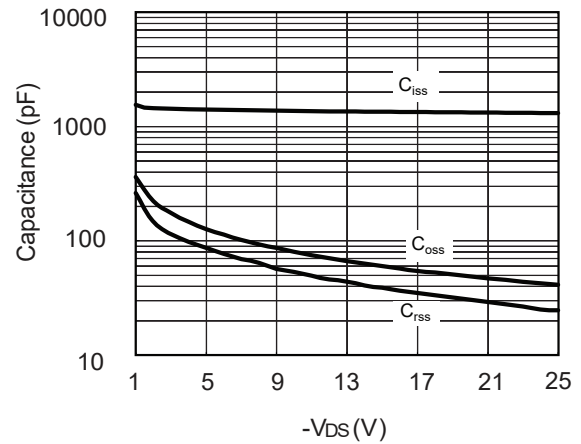


Body-Diode Characteristics

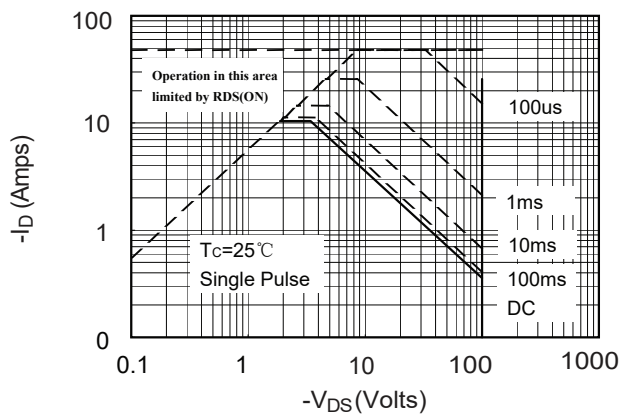
Typical Characteristics



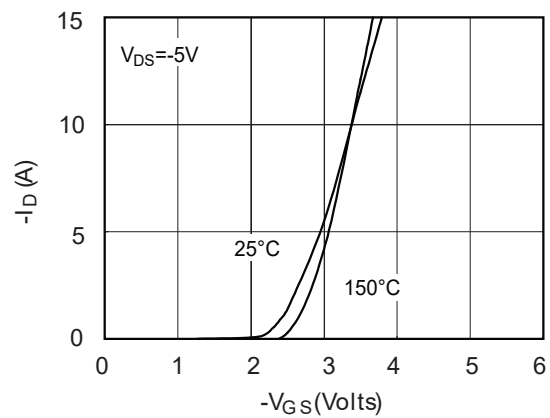
Gate-Charge Characteristics



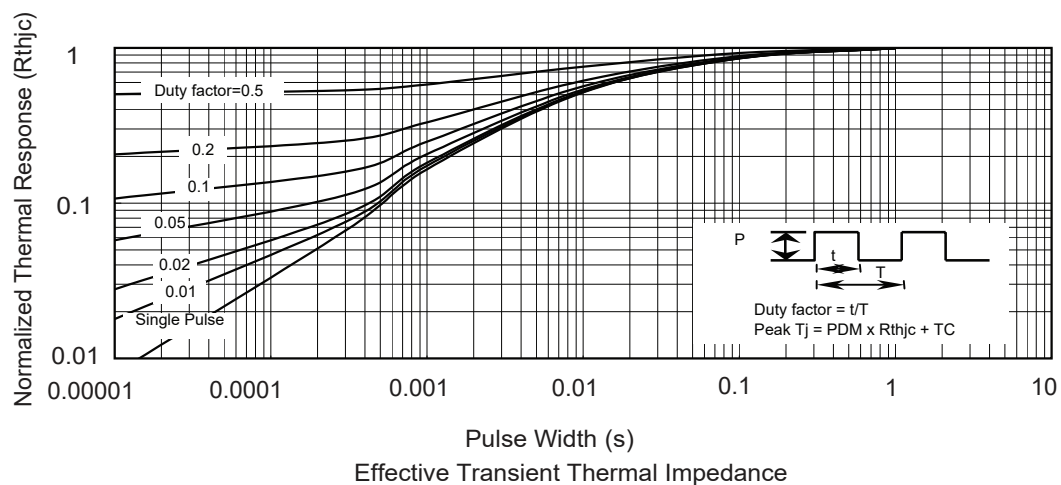
Capacitance Characteristics



Maximum Safe Operating Area



Transfer Characteristics



Effective Transient Thermal Impedance