

### General Description

The CMSC7423 combines advanced trench MOSFET technology with a low resistance package to provide extremely low RDS(ON). This device is ideal for load switch and battery protection applications.

### Features

- P-Channel MOSFET
- Low ON-resistance
- Surface Mount Package
- RoHS Compliant

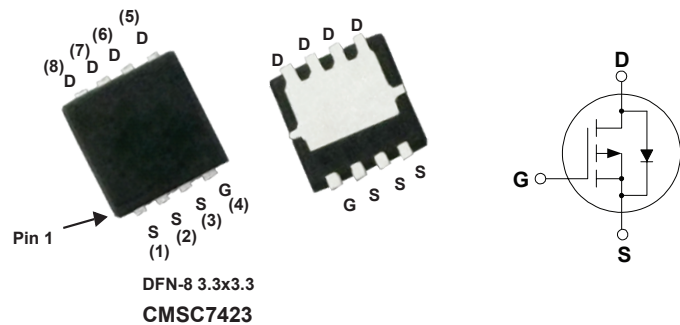
### Product Summary

BVDSS	RDSON	ID
-20V	5.8mΩ	-50A

### Applications

- High side in DC - DC Buck Converters
- Notebook battery power management
- Load switch in Notebook

### DFN-8 3.3x3.3 Pin Configuration



### Absolute Maximum Ratings (TA=25 °C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	-20	V
V <sub>GS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current	-50	A
I <sub>DM</sub>	Pulsed Drain Current	-150	A
EAS	Single Pulse Avalanche Energy <sup>1</sup>	180	mJ
P <sub>D@T<sub>C</sub>=25°C</sub>	Total Power Dissipation	85	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	---	55	°C/W

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =-250μA	-20	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-1A	---	---	5.8	mΩ
		V <sub>GS</sub> =-2.5V , I <sub>D</sub> =-1A	---	---	7	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> = -250μA	-0.5	---	-0.85	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	---	---	-1	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±12V , V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V , I <sub>D</sub> =-4A	---	30	---	S
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V , V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-20A	---	70	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	10	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	20	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, R <sub>GEN</sub> =3Ω R <sub>L</sub> =0.5Ω	---	18	---	ns
T <sub>r</sub>	Rise Time		---	52	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	290	---	
T <sub>f</sub>	Fall Time		---	125	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V , V <sub>GS</sub> =0V , f=1MHz	---	8500	---	pF
C <sub>oss</sub>	Output Capacitance		---	930	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	720	---	

**Diode Characteristics**

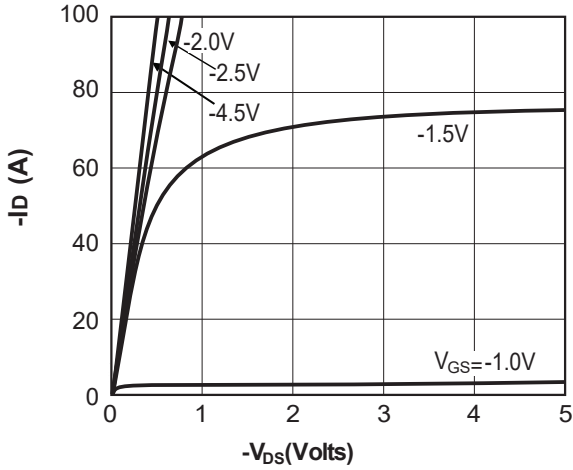
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>SD</sub> =-1A	---	---	-1.2	V

Notes:

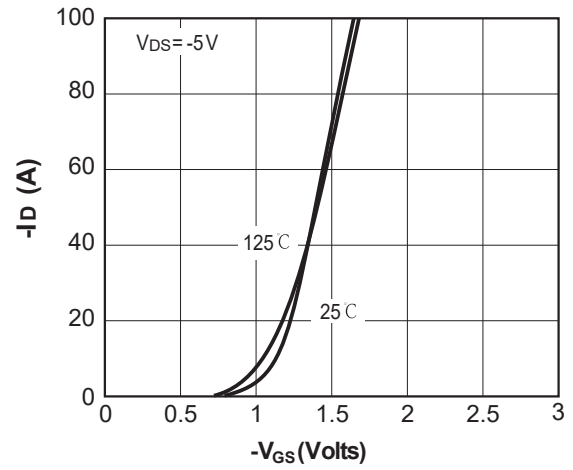
1. The test condition is V<sub>DS</sub>=15V , V<sub>GS</sub>=10V , L=0.5mH , I<sub>D</sub> =27A.

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 Cmos assumes no liability for customers' product design or applications.  
 Cmos reserves the right to improve product design , functions and reliability without notice.

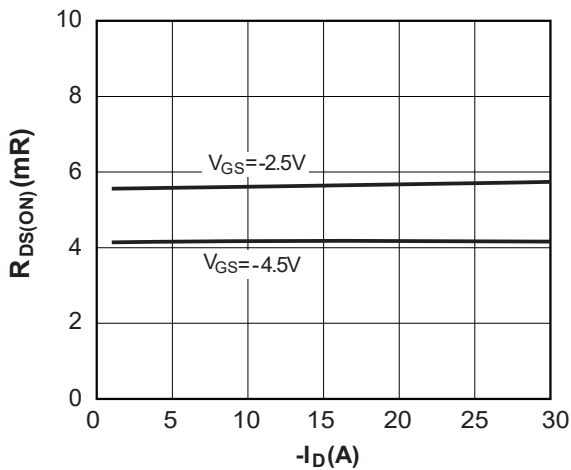
Typical Characteristics



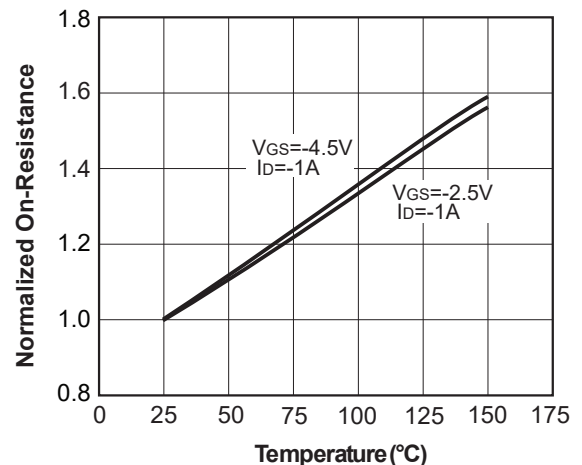
On-Region Characteristics



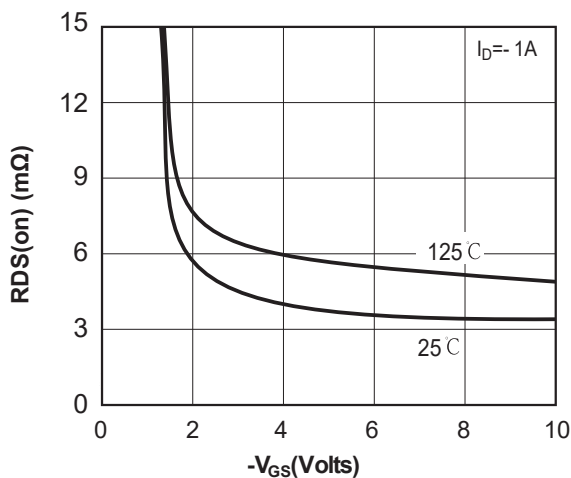
Transfer Characteristics



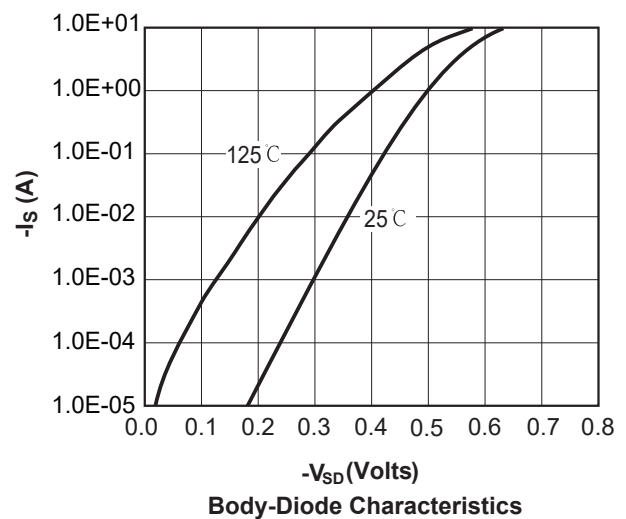
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Junction Temperature

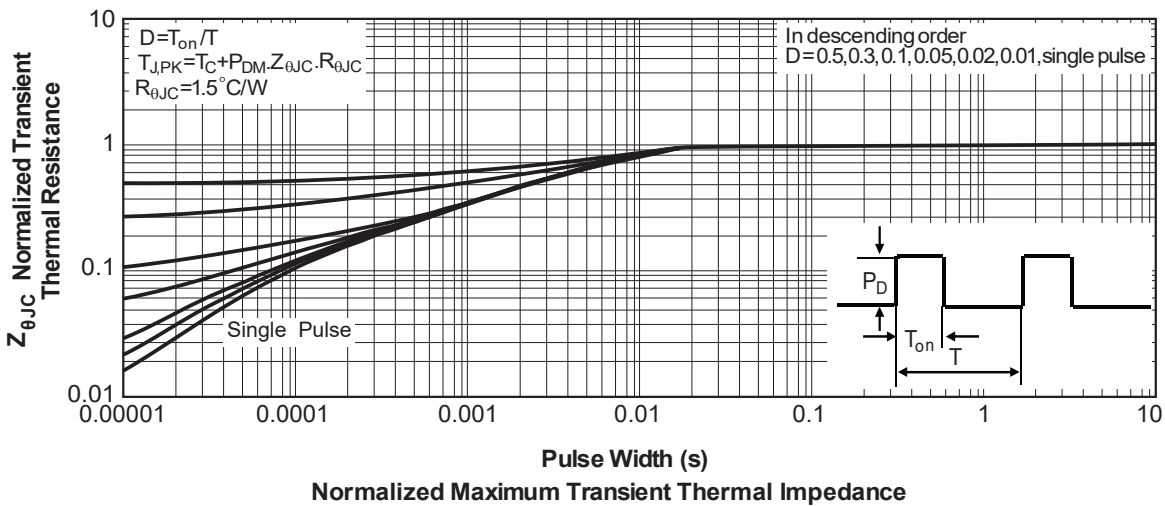
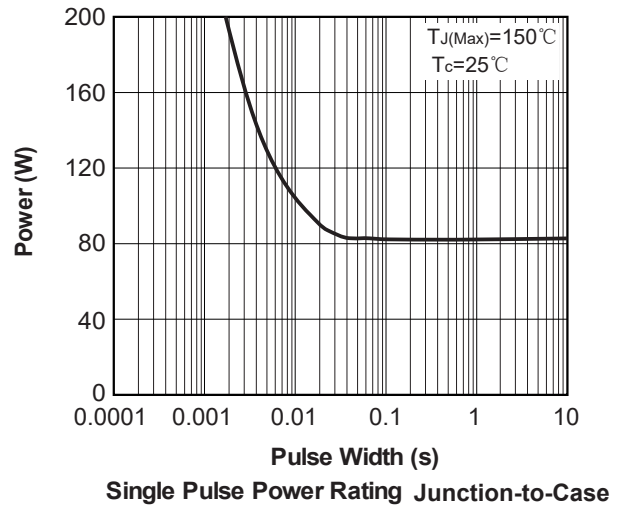
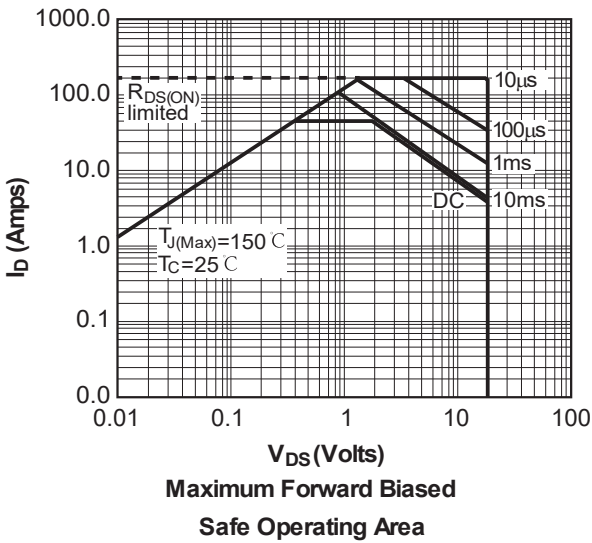
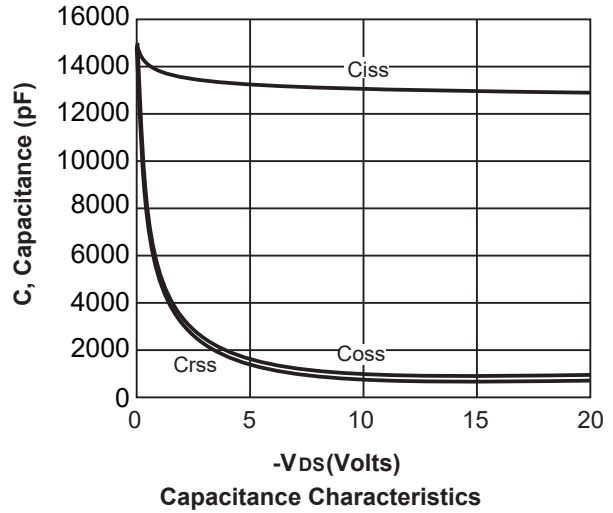
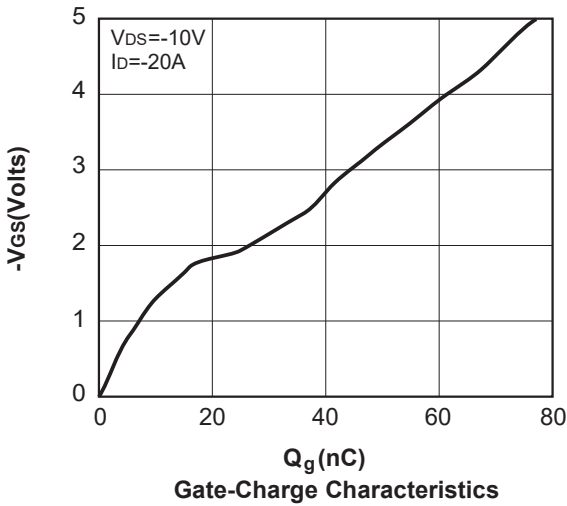


On-Resistance vs. Gate-Source Voltage

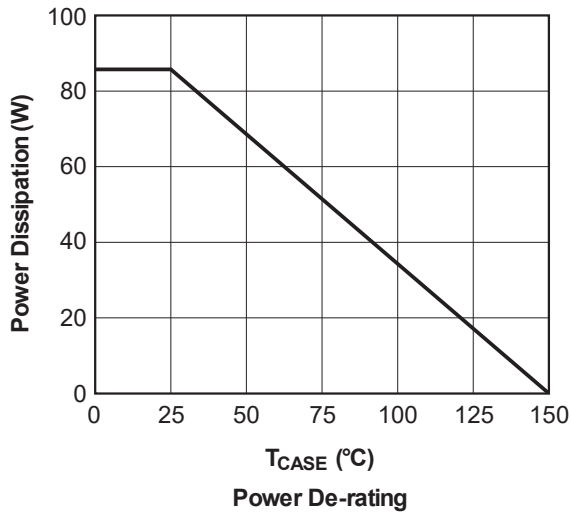


Body-Diode Characteristics

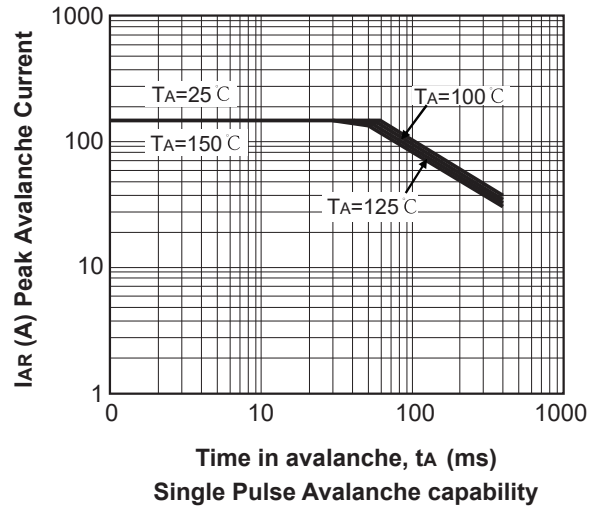
Typical Characteristics



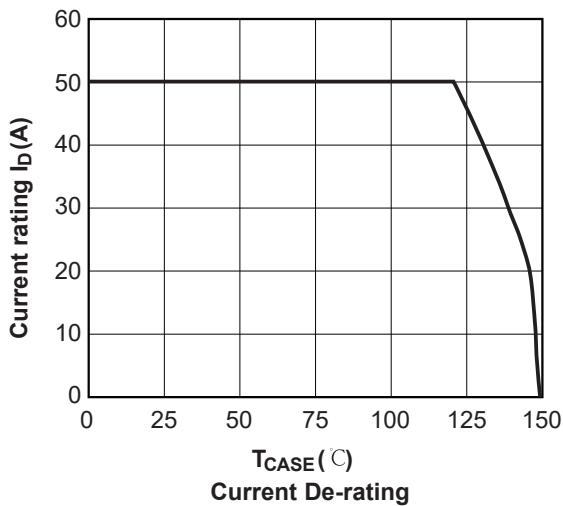
Typical Characteristics



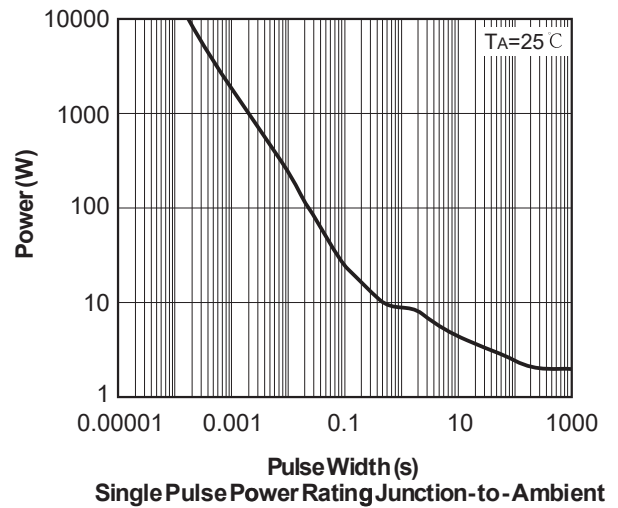
Power De-rating



Single Pulse Avalanche capability



Current De-rating



Single Pulse Power Rating Junction-to-Ambient

