-30V, 10.6mΩ typ., -42A P-Channel MOSFET

General Description

The P1403E uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
-30V	12mΩ	-42A

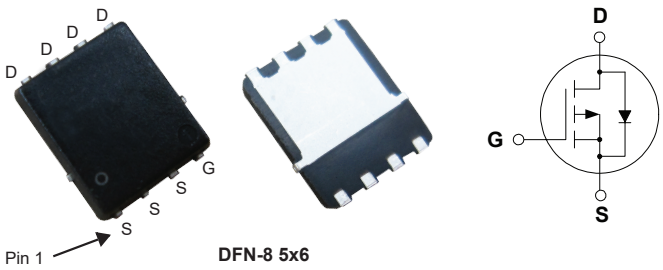
Applications

- Load Switch
- Power Management in Notebook Computer,Portable Equipment and Battery Powered Systems.

Features

- Low On-Resistance
- 100% avalanche tested
- Simple Drive Requirement
- RoHS Compliant

DFN-8 5x6 Pin Configuration



DFN-8 5x6

Type	Package	Marking
P1403E	DFN-8 5x6	P1403E

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	-42	A
I_D@T_C=100℃	Continuous Drain Current	-27	A
I_{DM}	Pulsed Drain Current	-168	A
EAS	Single Pulse Avalanche Energy[1]	242	mJ
P_D@T_C=25℃	Total Power Dissipation	40	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.13	℃/W

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Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V, I_D=-25A	---	10.6	12	mΩ
		V_{GS}=-4.5V, I_D=-20A	---	14	16	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-24V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-24V, V_{GS}=0V , T_J=55℃	---	---	-5	
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-15A	---	37	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	5.8	---	Ω
Q_g	Total Gate Charge	V_{DS}=-15V , I_D=-20A V_{GS}=-4.5V	---	26	---	nC
Q_{gs}	Gate-Source Charge		---	9	---	
Q_{gd}	Gate-Drain Charge		---	11	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=-15V, V_{GS}=-10V, I_D=-6A R_{GEN}=-4.7Ω	---	12	---	ns
T_r	Rise Time		---	95	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	18	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	2500	---	pF
C_{oss}	Output Capacitance		---	210	---	
C_{rss}	Reverse Transfer Capacitance		---	190	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-42	A
I_{SM}	Pulsed Source Current		---	---	-126	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=-28A	---	---	-1.2	V

Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=-25V , V_{GS}=-10V , L=1mH , I_{AS}=-22A.

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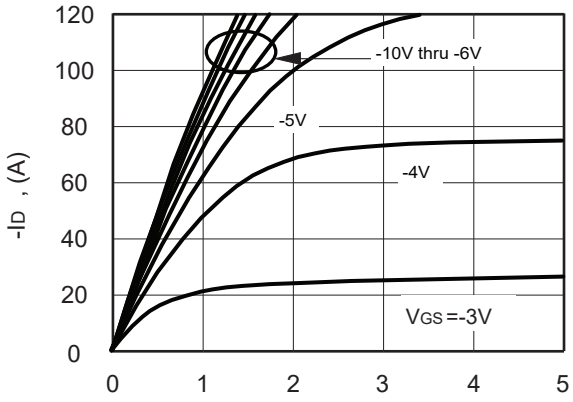
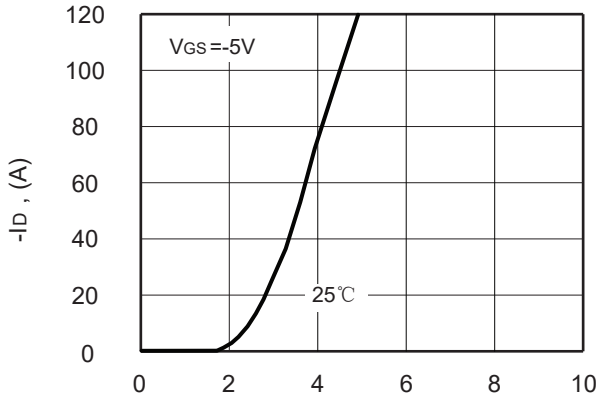
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

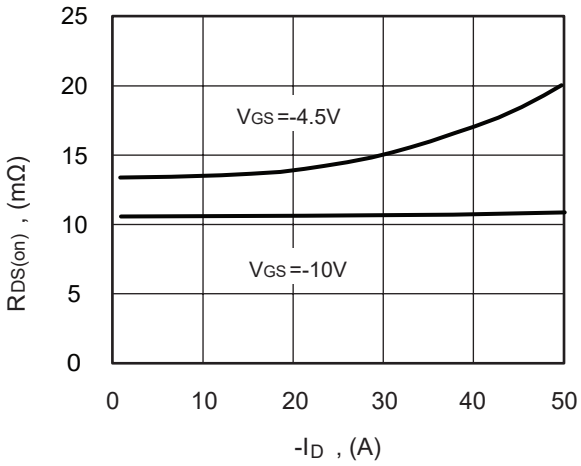
Typical Characteristics



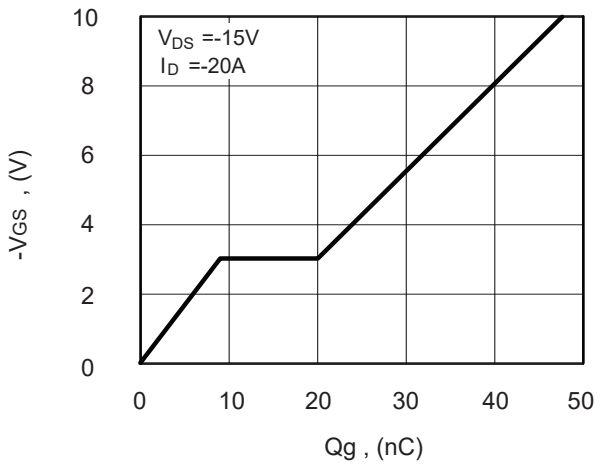
Output Characteristics



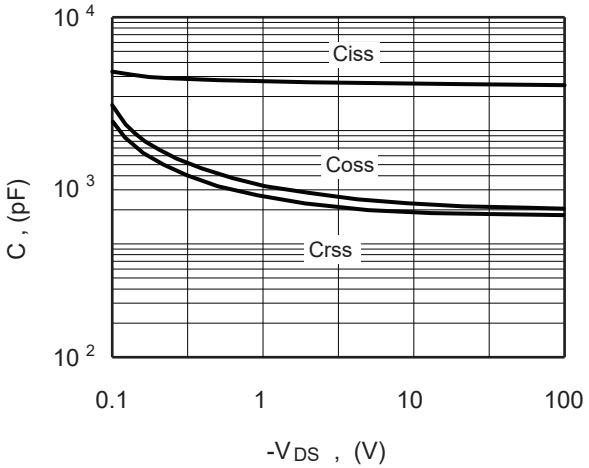
transfer characteristics



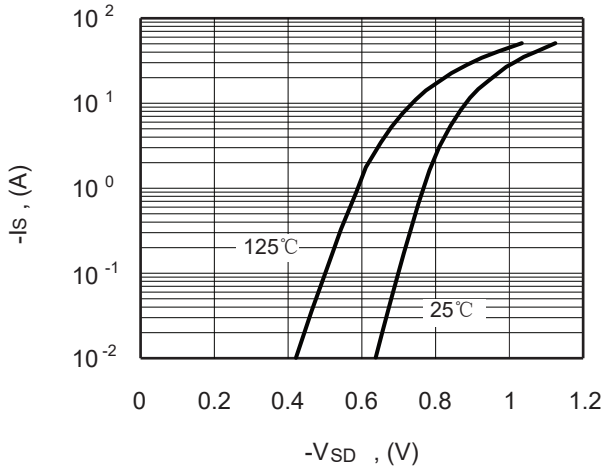
On-Resistance vs. Drain Current



Gate Charge Characteristics



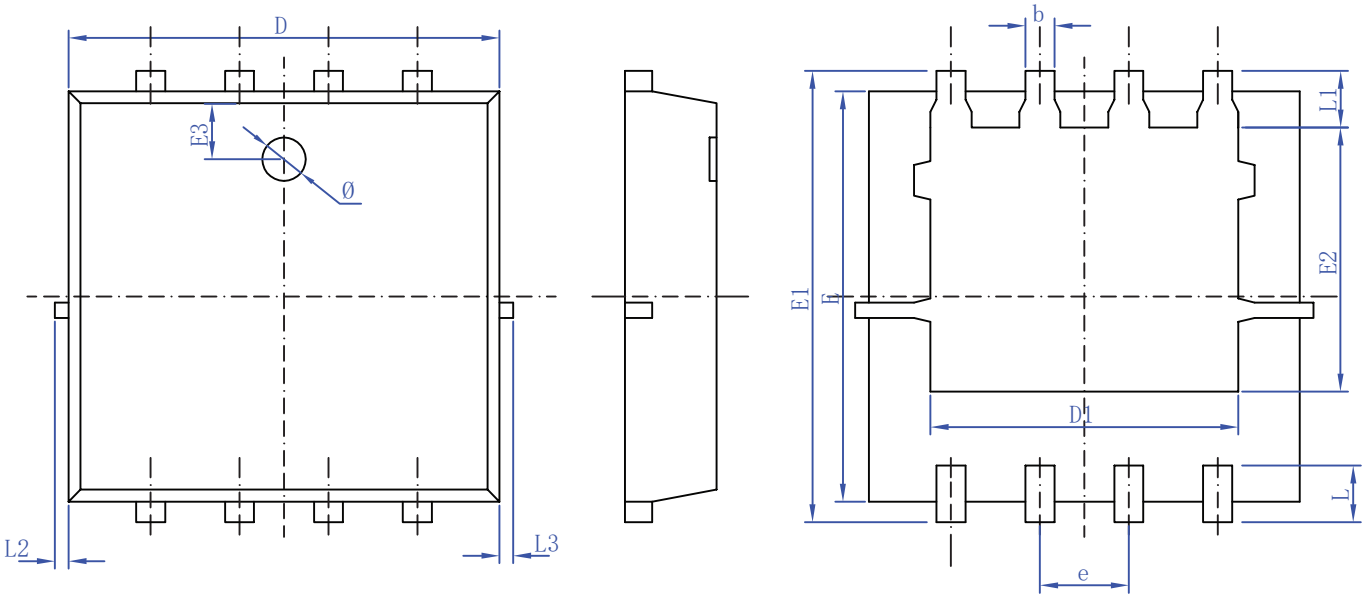
Capacitance Characteristics

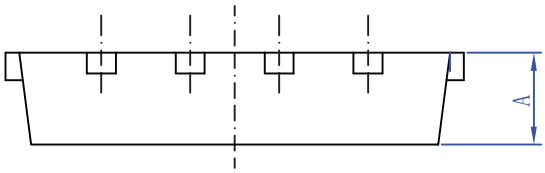


Body-Diode Characteristics

Package Dimension

DFN-8 5x6 Unit :mm





Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		

注：
1.未注公差±0.05未标注圆角R max=0.25