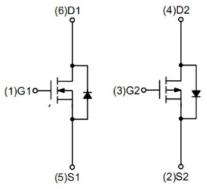
• General Description

It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. It combines one N Channel MOSFET and one P channel MOSFET.

• Product Summary



V_{DS1} =30V
V_{DS2} =-30V
$R_{DS(ON)1}$ =36mΩ
$R_{DS(ON)2}$ =65mΩ
I_{D1} = 5.8A
I_{D2} =-4.2A

• Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Dual DIE in one package

SOT23-6

RoHS

•Application

- Power Management in Notebook Computer
- BLDC Motor driver

•Ordering Information:

Part NO.	CH5NP03SQ
Marking	CH503
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

•N Channel Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	$I_{D@}T_C$=25℃	5.8	A
	$I_{D@}T_C$=75℃	3.8	A
	$I_{D@}T_C$=100℃	2.5	A
Pulsed Drain Current ①	I_{DM}	30	A
Total Power Dissipation	$P_D@T_C$=25℃	1.40	W
Total Power Dissipation	$P_D@T_A$=25℃	1.25	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	5	mJ

•P Channel Absolute Maximum Ratings (T_C =25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	$I_{D@}T_C$=25℃	-4.2	A
	$I_{D@}T_C$=75℃	-3.0	A
	$I_{D@}T_C$=100℃	-1.9	A
Pulsed Drain Current ①	I_{DM}	-22	A
Total Power Dissipation	$P_D@T_C$=25℃	9	W
Total Power Dissipation	$P_D@T_A$=25℃	0.45	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	5	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	36	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	89.29	° C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	° C

•N Channel Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	0.6		1.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=20V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10 V, I_D=5A			36	mΩ
		V_{GS}=4.5V, I_D=4A			39	mΩ
Forward Transconductance	g_{FS}	V_{DS} =10V, I_D=1A		5.9		s

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit

Input capacitance	Ciss	f = 1MHz	-	340	-	pF
Output capacitance	Coss		-	115	-	
Reverse transfer capacitance	Crss		-	33	-	

•Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	VDD =15V	-	11	-	nC
Gate - Source charge	Qgs	ID = 5.8A	-	1.6	-	
Gate - Drain charge	Qgd	VGS = 4.5V	-	2.8	-	

•P Channel Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =-250uA	-30			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =-250uA	-0.5		-1.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS} =0V			-1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=-10 V, I_D=-4A			65	mΩ
		V_{GS}=-4.5V, I_D=-3.0A			75	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-1A		5.0		s

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz	-	944	-	pF
Output capacitance	Coss		-	115	-	
Reverse transfer capacitance	Crss		-	77	-	

•Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = -15V	-	9.4	-	nC
Gate - Source charge	Qgs	I_D = -4A	-	2.0	-	
Gate - Drain charge	Qgd	V_{GS} = -10V	-	3.0	-	

N And P-Channel Enhancement Mode Power MOSSFET

N-Channel Typical Characteristics

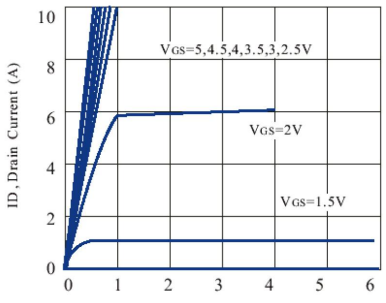


Figure 1. Output Characteristics

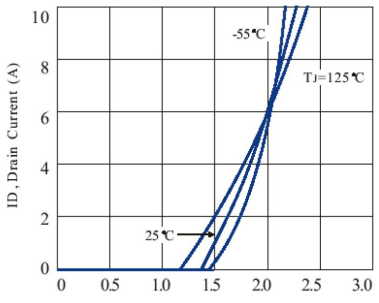


Figure 2. Transfer Characteristics

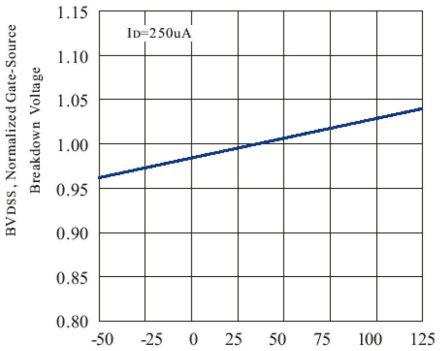


Figure 3. Breakdown Voltage Variation with Temperature

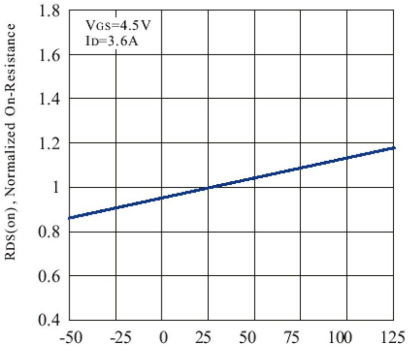


Figure 4. On-Resistance Variation with Temperatur

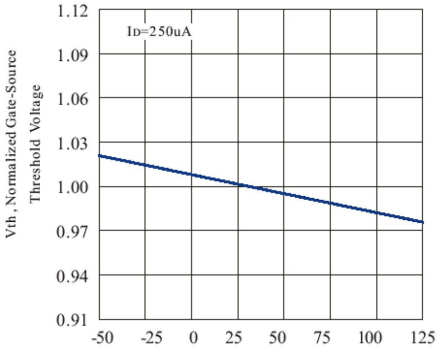


Figure 5. Gate Threshold Variation with Temperature

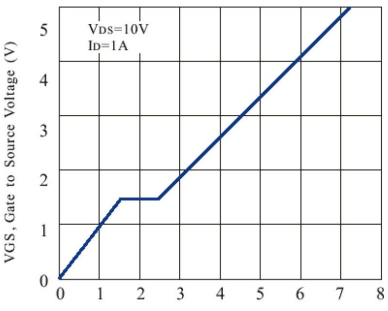
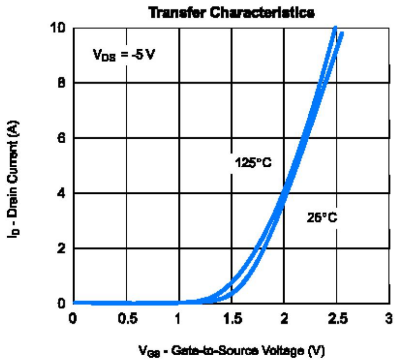
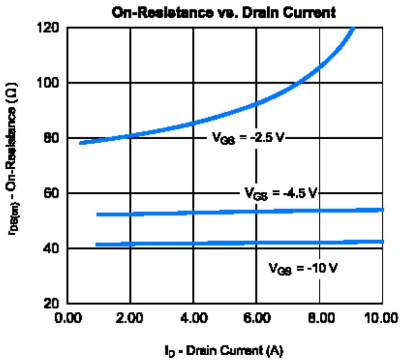


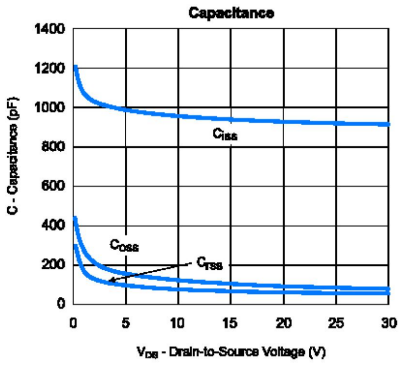
Figure 6. Gate Charge

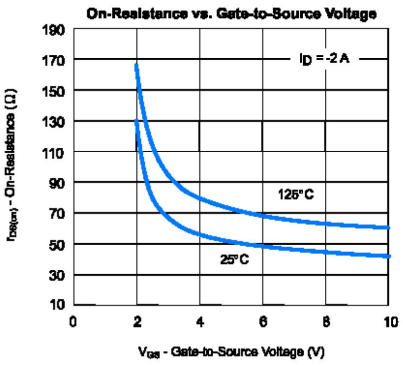
N And P-Channel Enhancement Mode Power MOSSFET

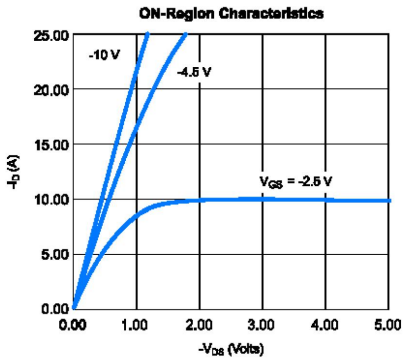
P-Channel Typical **Characteristics**



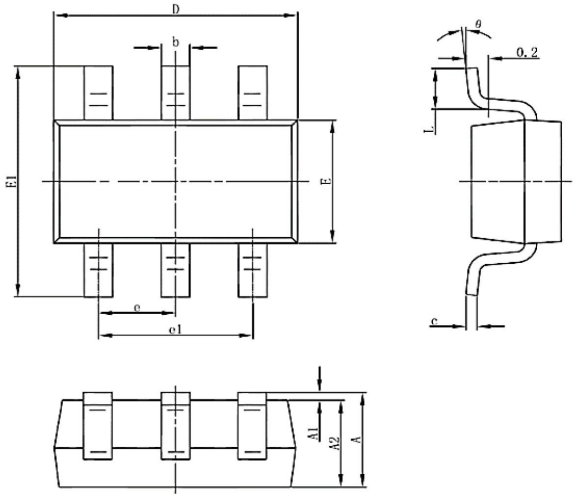








Package Mechanical Data-SOT23-6-Double



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950（BSC）		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0	8	0	8