



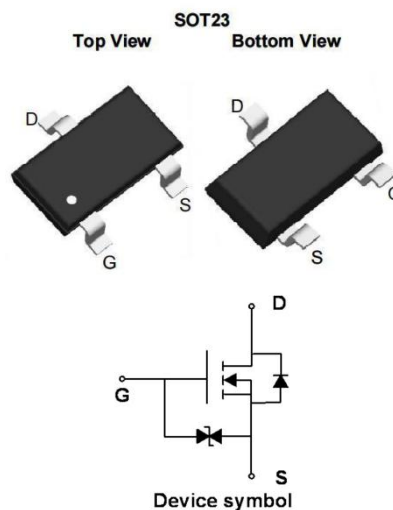
Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	I_D
-20V	$<26\text{m}\Omega @ V_{GS}=-4.5\text{V}$	-6.2A

Description and Applications

- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

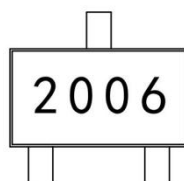
Package & Internal Circuit



Ordering Information

Part Number	Package Type	Package Qty
CFS21P20	SOT-23-3L	3,000/Tube

Marking Information



2006--Part Number

Green product

Absolute Maximum Rating ($T_{amb}=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V _{DS}	-20	V
Gate-Source Voltage		V _{GS}	±12	V
Drain Current - Continuous	T _C =25℃	I _D	-6.2	A
	T _C =100℃		-4	A
Pulsed Drain Current		I _{D,pulse}	-24.8	A
Power Dissipation	T _C =25℃	P _D	1.6	W
	T _C =100℃		0.6	W
Operating and Storage Temperature Range		T _J ,T _{STG}	-55 to 150	℃

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	-	75	°C/W
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	-	-	°C/W

Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V			-1	uA
		T _J =125°C			-100	uA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±12V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-0.5		-1	V
R _{DS(ON)}	Drain-Source on-Resistance	V _{GS} = -4.5V, I _D = -5A		21	26	mΩ
		V _{GS} = -2.5V, I _D = -4A		27.3	36	mΩ
g _{FS}	Forward Transconductance	V _{DS} = -5V, I _D = -5A		11.5		Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = -10V f=1MHz		1493		pF
C _{oss}	Output Capacitance			176		pF
C _{rss}	Reverse Transfer Capacitance			130		pF
Q _g	Total Gate Charge	V _{GS} = -4.5V V _{DS} = -10V I _D = -5A		14.2		nC
Q _{gs}	Gate Source Charge			1.1		nC
Q _{gd}	Gate Drain Charge			4.8		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-10V V _{DS} =-4.5V R _L =1.5Ω R _G =6Ω		13		ns
t _r	Turn-On Rise Time			32		ns
t _{D(off)}	Turn-Off DelayTime			27		ns
t _f	Turn-Off Fall Time			9		ns
Drain-Source Body Diode Characteristics						
V _{SD}	Body Diode Forward Voltage	I _s = -5A V _{GS} = 0V			-1	V
I _{SD}	Source-Drain Current (Body Diode)				-6.2	A

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

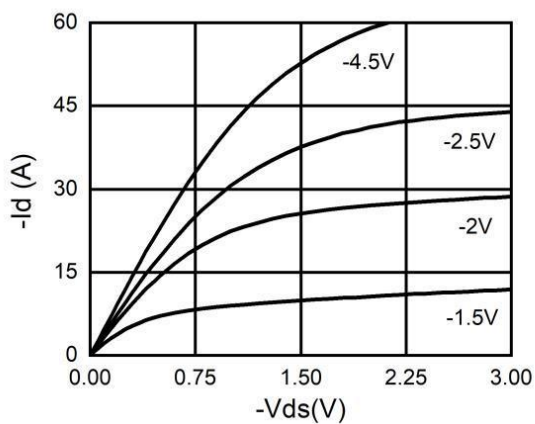


Figure 1: Output Characteristics

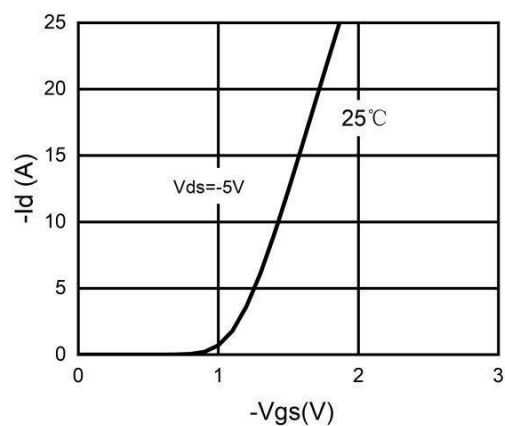


Figure 2: Transfer Characteristics

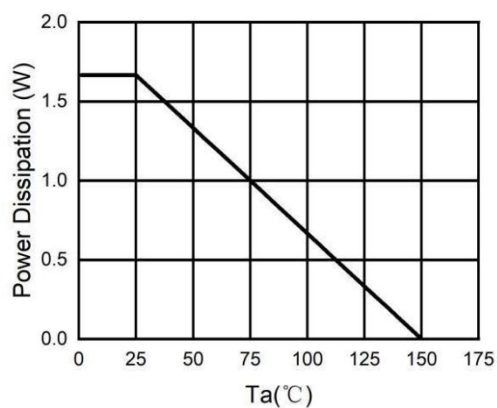


Figure 3: Power Dissipation

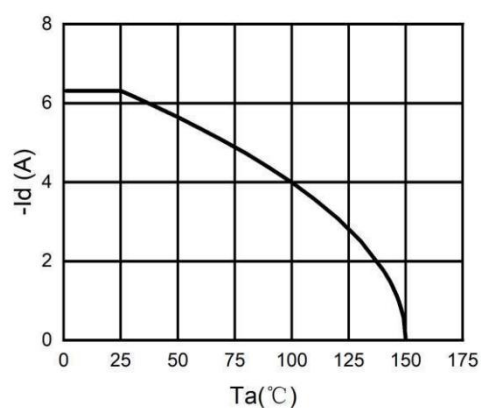


Figure 4: Drain Current

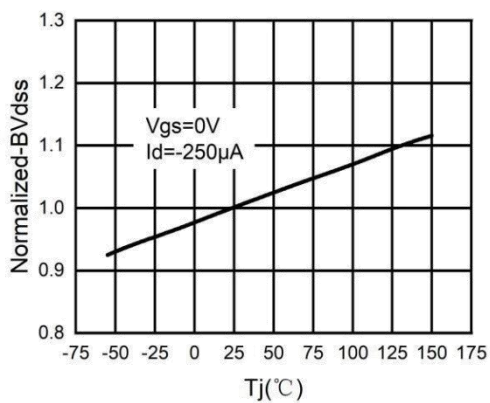


Figure 5: BV_{DSS} vs Junction Temperature

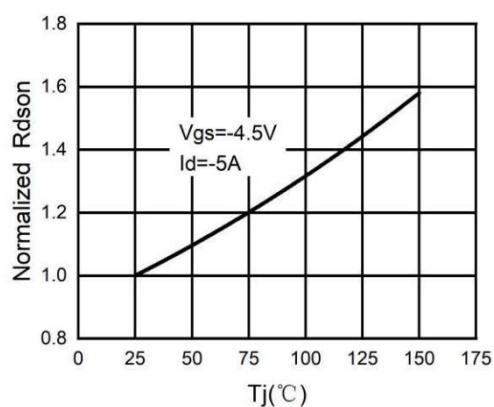


Figure 6: $R_{DS(ON)}$ vs Junction Temperature

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

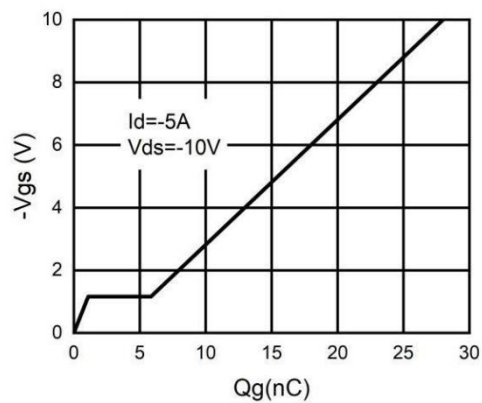


Figure 7: Gate Charge Waveforms

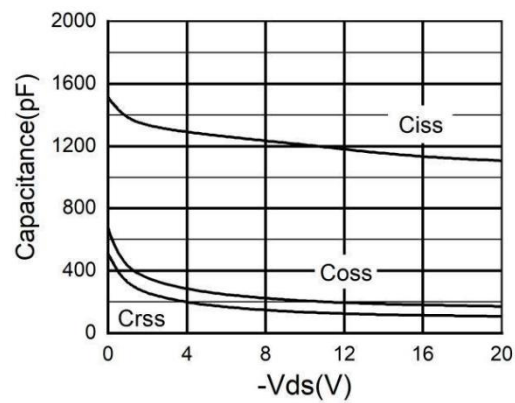


Figure 8: Capacitance

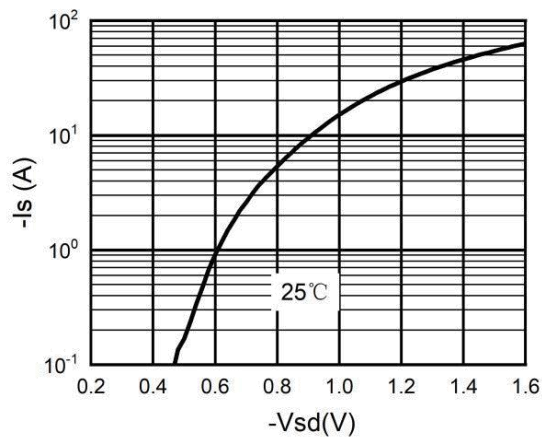


Figure 9: Body-Diode Characteristics

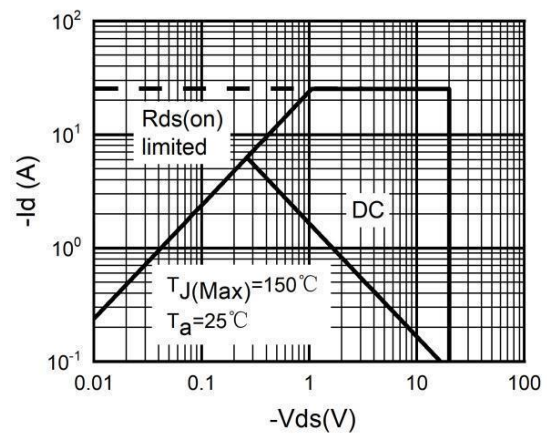
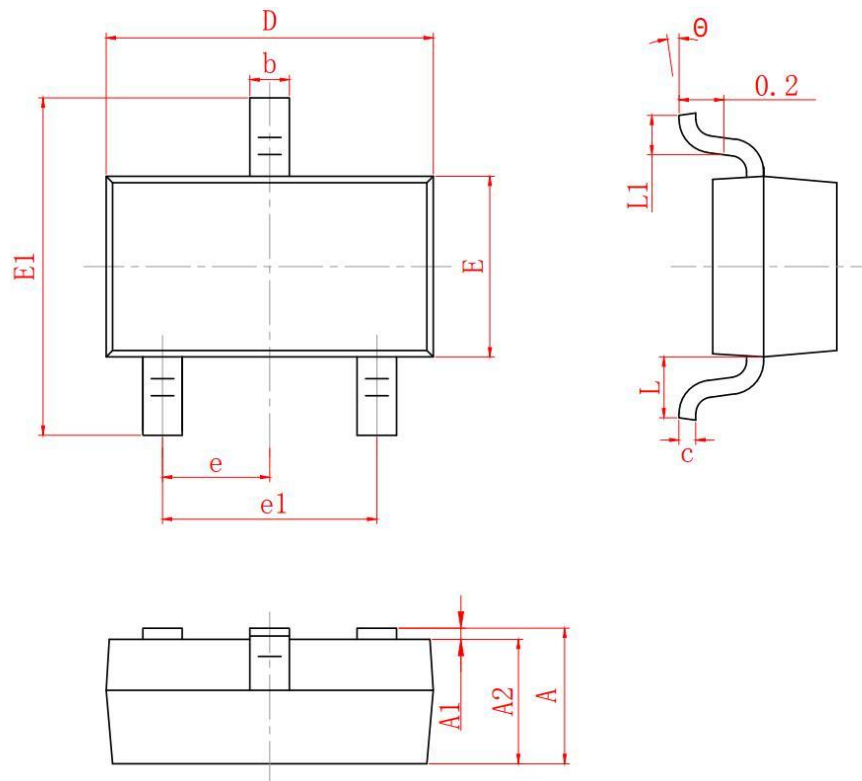


Figure 10: Maximum Safe Operating Area

SOT-23 Packag



SYMBOL	MIN	NOM	MAX
A	0.90	1.05	1.20
A1	0.00	0.05	0.10
A2	0.90	1.00	1.10
b	0.30	0.40	0.50
c	0.08	0.10	0.15
D	2.80	2.90	3.00
E	1.20	1.30	1.40
E1	2.30	2.40	2.50
L	0.30	0.40	0.50
θ	0°	5°	10°
L1	0.55 REF		
e	0.95 BSC		
e1	1.90 REF		

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