

Descriptions

This -20V -4A P-Channel MOSFET in a SOT23-3 Plastic Package.

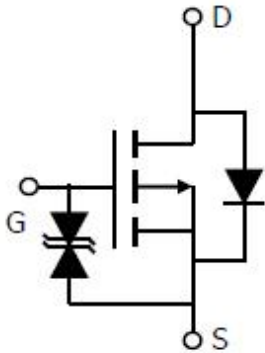
Features

- $R_{DS(ON)} < 41\text{ m}\Omega, V_{GS} = -4.5\text{V}$
- $R_{DS(ON)} < 53\text{ m}\Omega, V_{GS} = -2.5\text{V}$
- Halogen-free Product.

Applications

Load switch, Battery protection.

Equivalent Circuit



Pinning



PIN1: Gate

PIN 2: Source

PIN 3: Drain

Marking

Marking	AFH
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Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	-20	V
Gate-Source Voltage	V _{GS}	±8	V
Drain Current-Continuous @ T _C =25°C	I _D	-4	A
Drain Current-Pulsed Note1 @ T _C =25°C	I _{DM}	-30	A
Maximum Power Dissipation	P _D	1.5	W
Storage Temperature Range	T _{STG}	-55 to +150	°C
Operating Junction Temperature Range	T _J	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient Note2	R _{θJA}	100	°C/W

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B _{VDS}	V _{GS} =0V I _{DS} =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V V _{GS} =0V			-1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} =±8V V _{DS} =0V			±10	uA
Gate Threshold Voltage	V _{TH}	V _{DS} =V _{GS} I _{DS} =-250μA	-0.3	-0.6	-0.9	V
Drain-Source On-State Resistance	R _{DS}	V _{GS} =-4.5V I _{DS} =-4A		35	41	mΩ
		V _{GS} =-2.5V I _{DS} =-4A		45	53	
Input Capacitance	C _{iss}	V _{DS} =-10V V _{GS} =0V f=1MHz		750		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			80		
Turn-On Delay Time	t _{d(on)}	V _{DS} =-10V V _{GS} =-4.5V R _G =3 R _L =2.5		15.6		ns
Rise Time	t _r			11.2		
Turn-Off Delay Time	t _{d(off)}			23.1		
Fall Time	t _f			32.7		
Total Gate Charge at 10V	Q _g	V _{DS} =-10V I _{DS} =-4A V _{GS} =-4.5V		10		nC
Gate to Source Gate Charge	Q _{gs}			1.5		
Gate to Drain "Miller" Charge	Q _{gd}			2.2		
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V I _{DS} =-1A		-0.7		V

Notes:

1. Pulse Test: Pulse Width 300μs, Duty Cycle 2%.
2. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design. R_{θJA} shown below for single device operation on FR-4 in still air.

Electrical Characteristic Curve

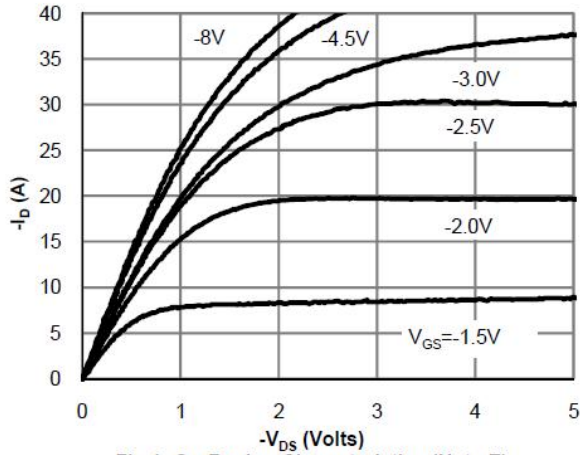


Figure 1: On-Region Characteristics (Note E)

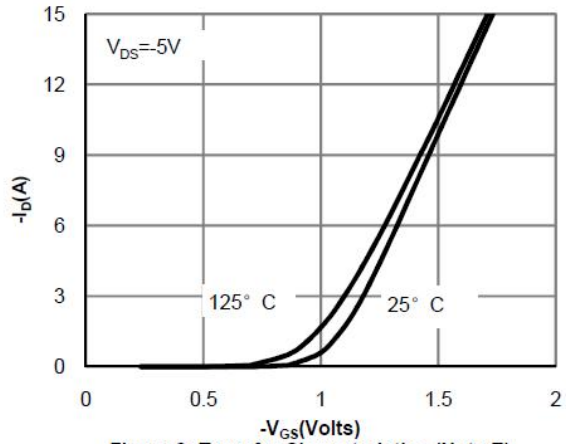


Figure 2: Transfer Characteristics (Note E)

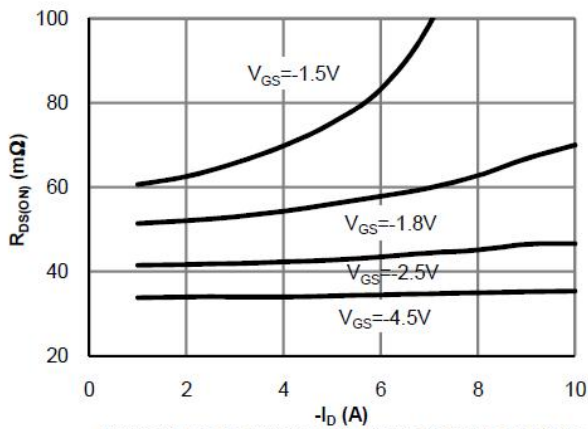


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

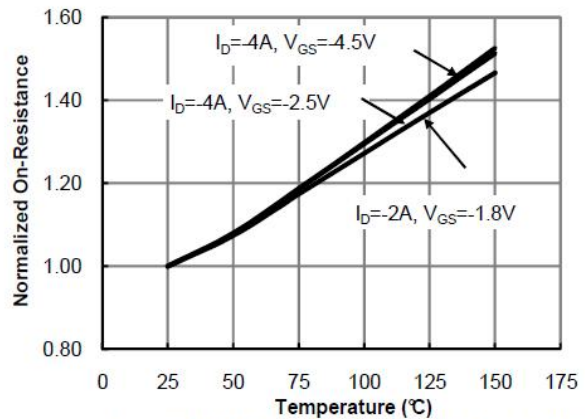


Figure 4: On-Resistance vs. Junction Temperature (Note E)

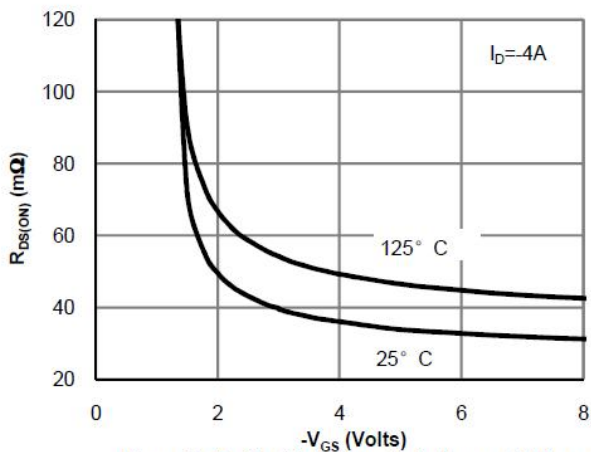


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

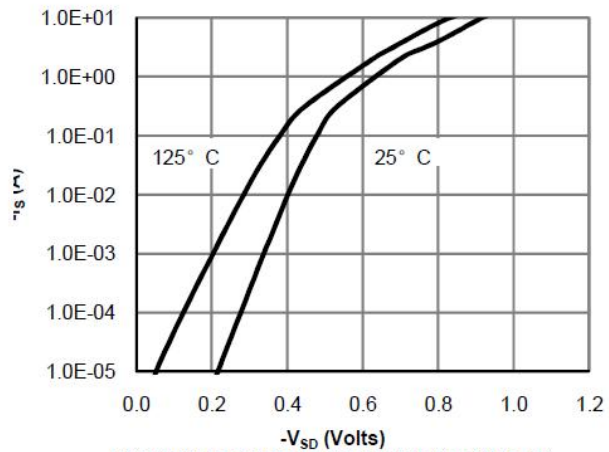
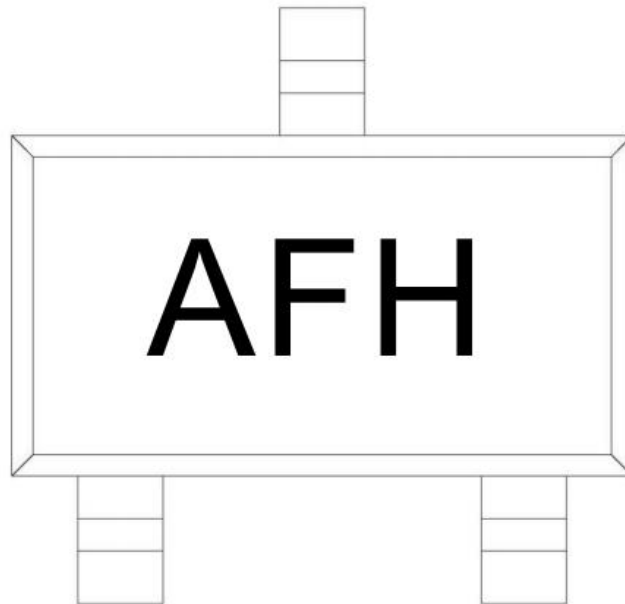


Figure 6: Body-Diode Characteristics (Note E)

Marking Instructions



Note:

AF: Product Type

H: Company Code

Packaging SPEC

REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT23-3	3,000	10	30,000	4	120,000	7" ×8	210×205×205	445×230×435

Package Outline Dimensions

