

BRCS3415MCQ

Rev.A Sep.-2023

/ Descriptions

SOT23-3 G
P- CHANNEL MOSFET in a SOT23-3 Plastic Package.

/ Features

$R_{DS(ON)} < 41\text{ m}\Omega$, $V_{GS} = -4.5\text{V}$

$R_{DS(ON)} < 53\text{ m}\Omega$, $V_{GS} = -2.5\text{V}$

$f_{sw} < 80\text{ kHz}$

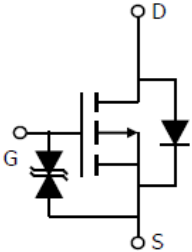
HF Product.

Qualified to AEC-Q101 Standards for High Reliability,

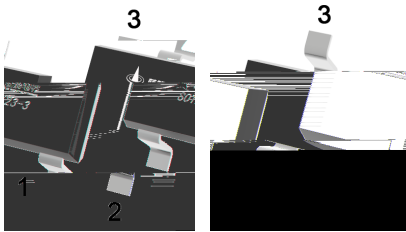
/ Applications

Load switch Battery protection, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit



/ Pinning



PIN1 G

PIN 2 S

PIN 3 D

/ Marking

Marking	AFQ
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/ Absolute Maximum Ratings(Ta=25)

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 _{JA}	100	° C/W

/ Electrical Characteristics(Ta=25)

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	m
		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_{JA} 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_{JC} is guaranteed by design while R_{CA} is determined by the user's board design. R_{JA} shown below for single device operation on FR-4 in still air.

/ Electrical Characteristic Curve

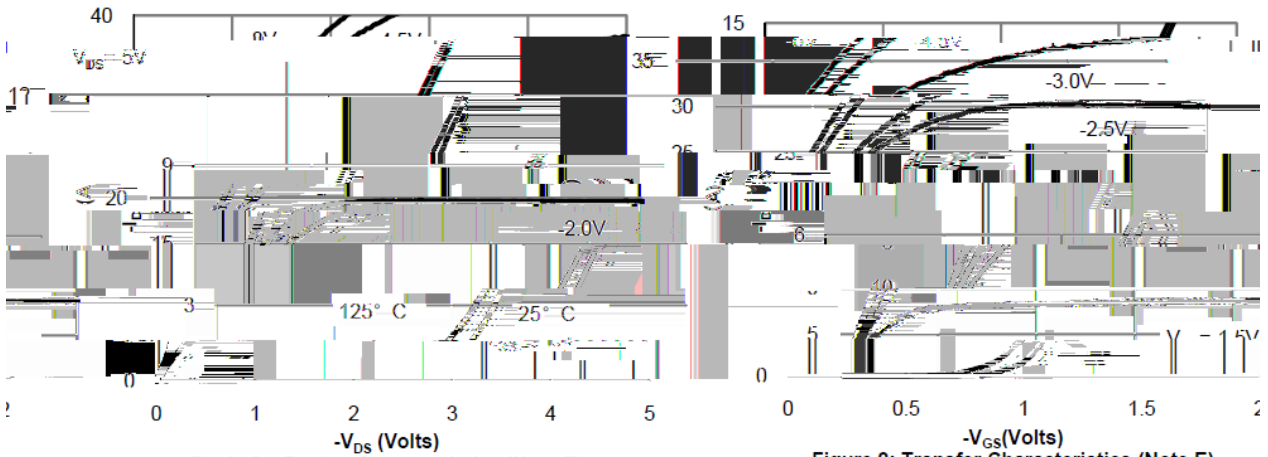
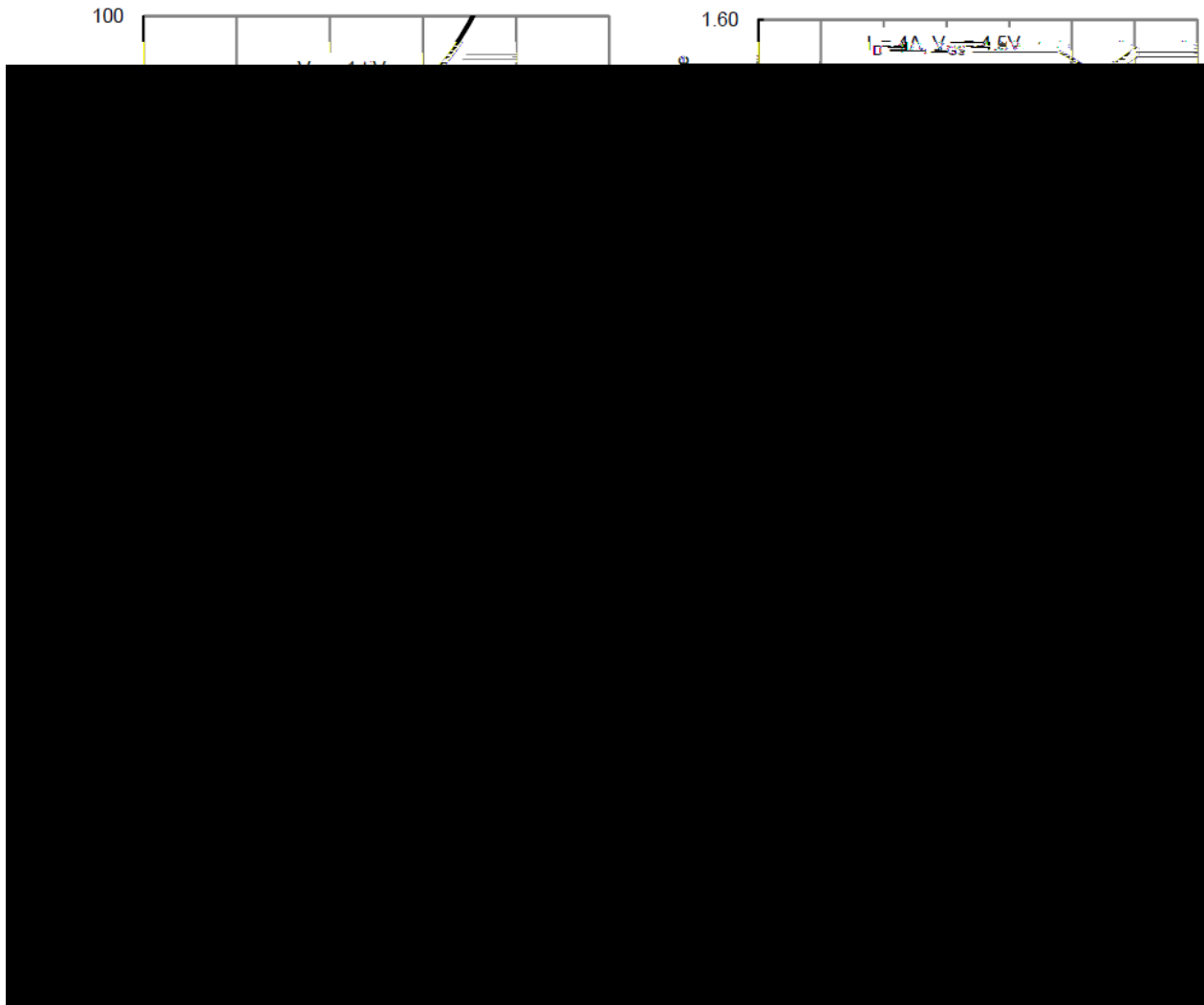
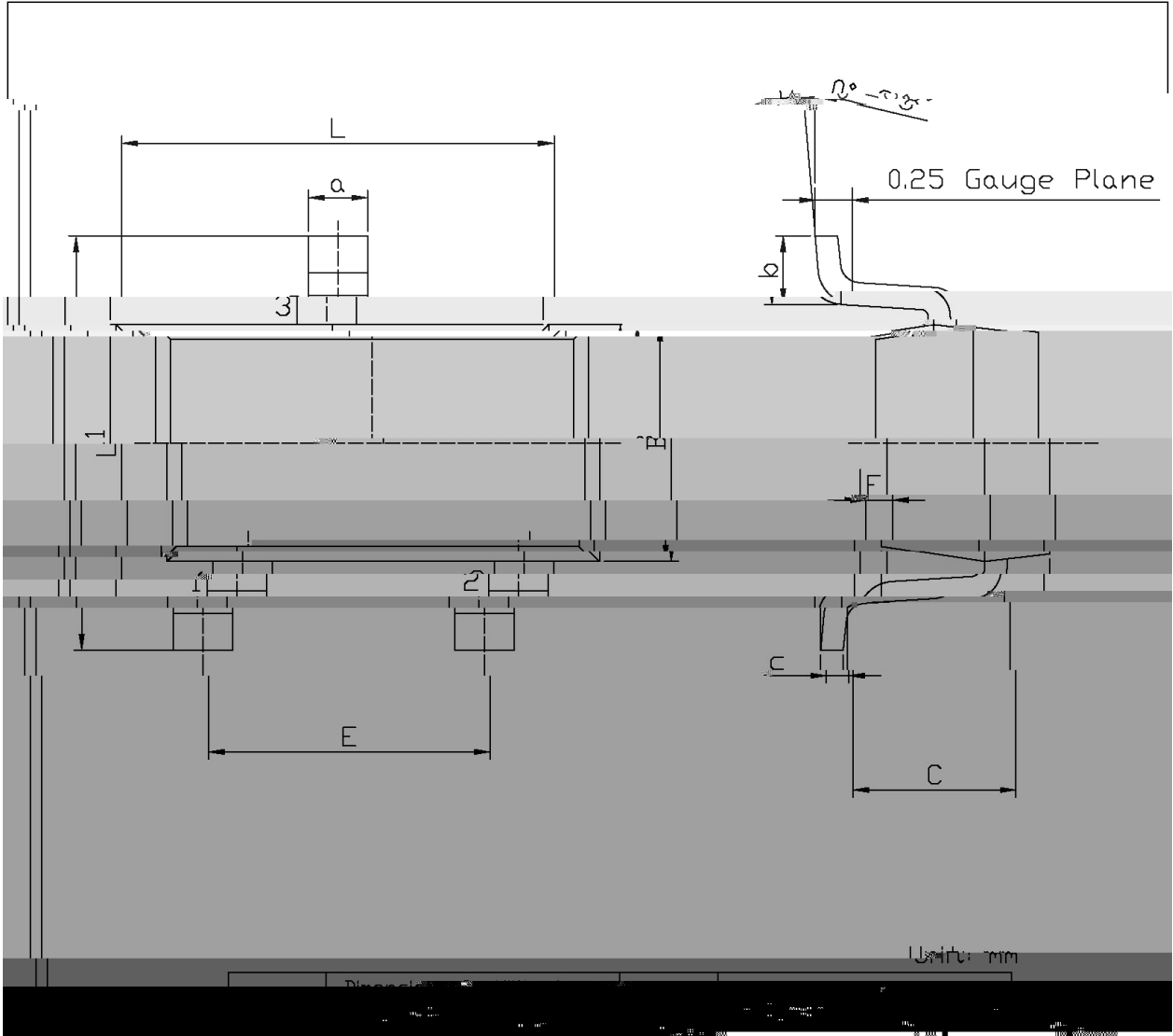


Fig 1: On-Region Characteristics (Note E)

Figure 2: Transfer Characteristics (Note E)

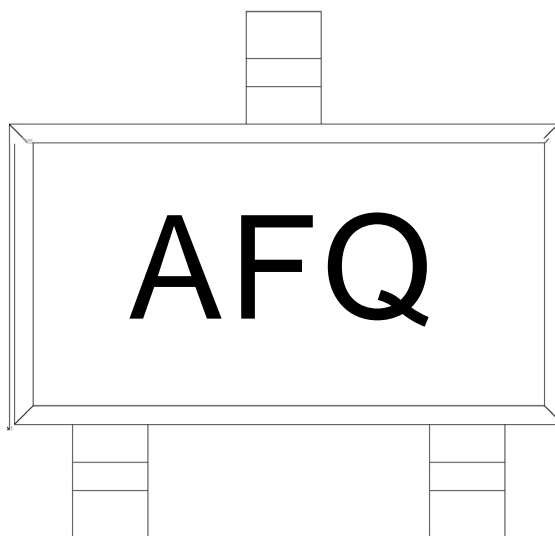


/ Package Dimensions



SC-29-3

/ Marking Instructions



H :

AF:

Note:

Q: Automobile halogen-free product Code

AF Product Type

() / Temperature Profile for IR Reflow Soldering(Pb-Free)

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Note:

- 1 150 ~ 200 60 ~ 120sec; 1.Preheating:150~200 , Time:60~120sec.
- 2 255..5 5..0.5sec; 2.Peak Temp.:255..5 , Duration:5..0.5sec.
- 3 2 ~ 10 /sec. 3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260..5 10..1 sec. Temp.:260..5 Time:10..1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units	Dimension	(unit mm ³)
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