

# AP3415E

## P-Channel Power MOSFET

### 描述 / Descriptions

SOT23 塑封封装 P 道 MOS 场效应管。

P- CHANNEL MOSFET in a SOT23 Plastic Package.

### 特征 / Features

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

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

无卤产品。HF Product.

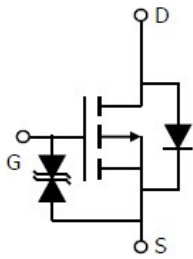
ESD

### 用途 / Applications

负载开关，电池保护。

Load switch , Battery protection.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : G

PIN 2 : S

PIN 3 : D

### 印章代码 / Marking

Marking	3415E
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**AP3415E**
**P-Channel Power MOSFET**
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current-Continuous @ $T_C = 25^\circ\text{C}$	$I_D$	-4	A
Drain Current-Pulsed Note1 @ $T_C = 25^\circ\text{C}$	$I_{DM}$	-24	A
Maximum Power Dissipation	$P_D$	1.25	W
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient Note2	$R_{\theta JA}$	100	$^\circ\text{C/W}$

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	$B_{V_{DSS}}$	$V_{GS}=0V$ $I_{DS}=-250\mu A$	-20			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V$ $V_{GS}=0V$			-1	$\mu A$
Gate-Body Leakage	$I_{GSS}$	$V_{GS}=\pm 8V$ $V_{DS}=0V$			$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{TH}$	$V_{DS}=V_{GS}$ $I_{DS}=-250\mu A$	-0.3	-0.8	-1.2	V
Drain-Source On-State Resistance	$R_{DS}$	$V_{GS}=-4.5V$ $I_{DS}=-4A$		35	41	$m\Omega$
		$V_{GS}=-2.5V$ $I_{DS}=-3A$		55	65	
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 300 $\mu s$ , Duty Cycle 2%.
2.  $R_{\theta JA}$  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.  $R_{\theta JC}$  is guaranteed by design while  $R_{\theta CA}$  is determined by the user's board design.  $R_{\theta JA}$  shown below for single device operation on FR-4 in still air.

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电参数曲线图 / Electrical Characteristic Curve

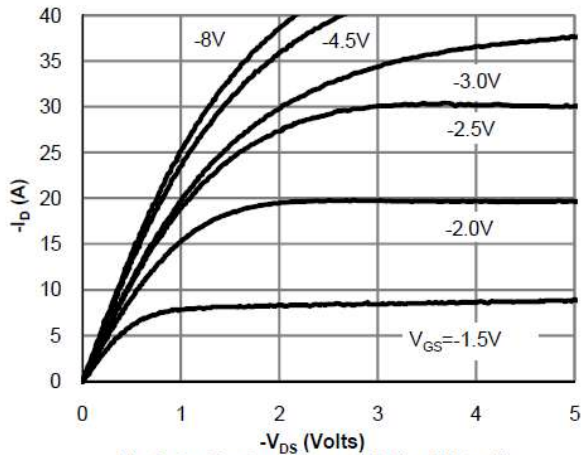


Fig 1: On-Region Characteristics (Note E)

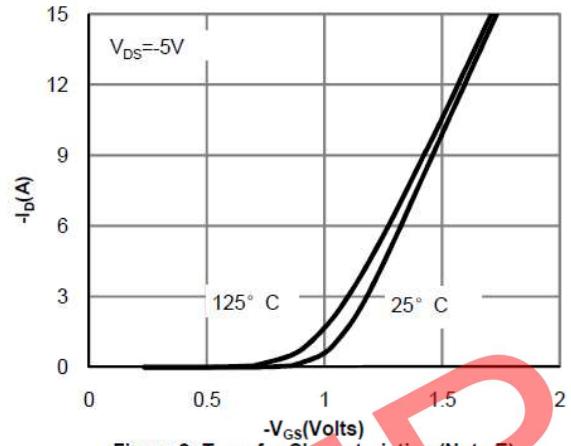


Figure 2: Transfer Characteristics (Note E)

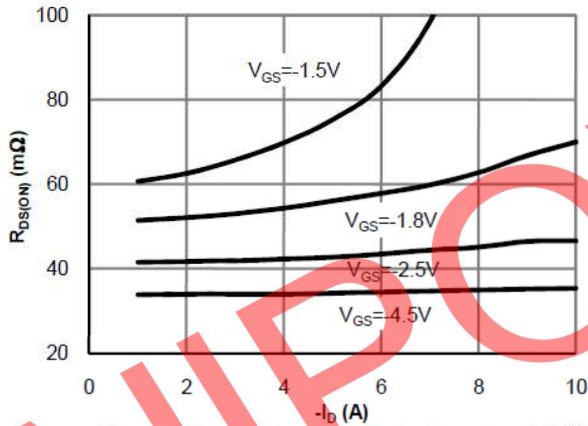


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

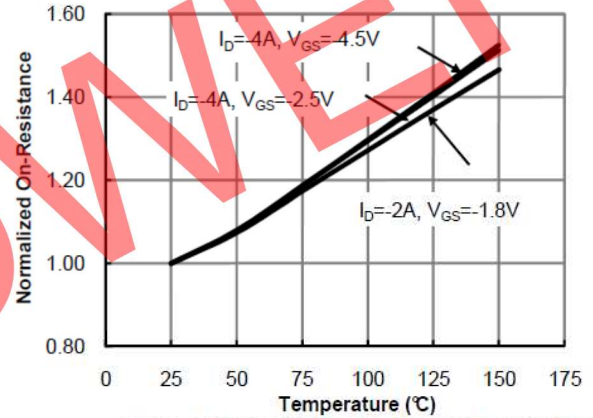


Figure 4: On-Resistance vs. Junction Temperature (Note E)

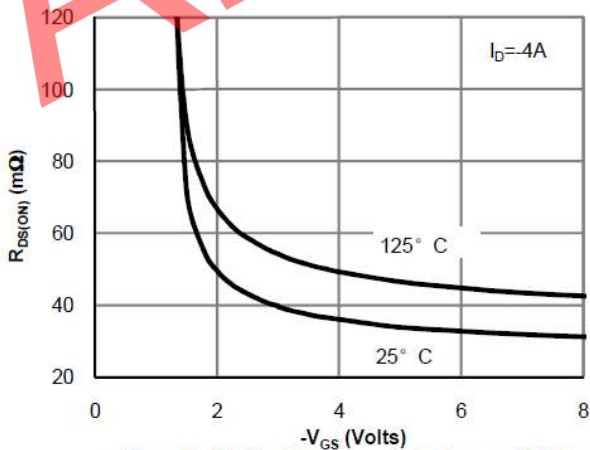


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

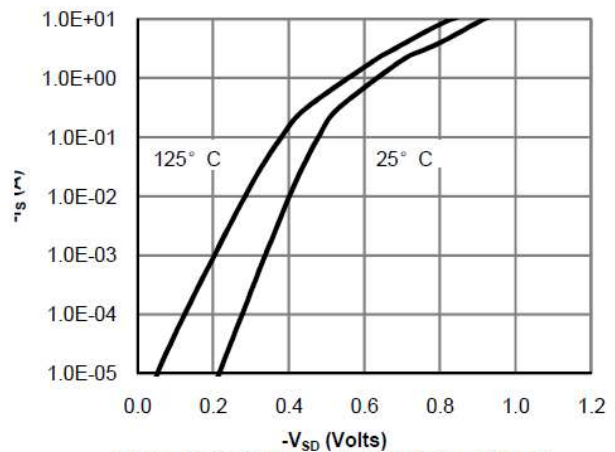


Figure 6: Body-Diode Characteristics (Note E)

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外形尺寸图 / Package Dimensions

SOT-23

单位: mm

