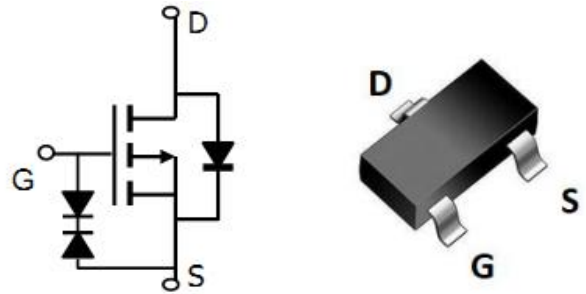


**SOT-23 -20V P Channel ESD Protection 沟道带静电保护  
MOS Field Effect Transistor 场效应管**



**■ Absolute Maximum Ratings 最大额定值**

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Drain-Source Voltage 漏极-源极电压	$BV_{DSS}$	-20	V
Gate- Source Voltage 栅极-源极电压	$V_{GS}$	$\pm 12$	V
Drain Current (continuous)漏极电流-连续	$I_D$ (at $T_A = 25^\circ C$ )	-5.6	A
Drain Current (pulsed)漏极电流-脉冲	$I_{DM}$	-23	A
Total Device Dissipation 总耗散功率	$P_D$ (at $T_A = 25^\circ C$ )	1300	mW
ESD Protected Up to 人体模式静电保护范围	ESD(HBM)	2.0	kV
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	98	$^\circ C/W$
Junction/Storage Temperature 结温/储存温度	$T_J, T_{stg}$	-55~150	$^\circ C$

**■ Device Marking 产品字标**

AO3415=3415

**■ Electrical Characteristics 电特性**

 (T<sub>A</sub>=25°C unless otherwise noted 如无特殊说明, 温度为 25°C)

Characteristic 特性参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Drain-Source Breakdown Voltage 漏极-源极击穿电压(I <sub>D</sub> = -250uA, V <sub>GS</sub> =0V)	BV <sub>DSS</sub>	-20	—	—	V
Gate Threshold Voltage 栅极开启电压(I <sub>D</sub> = -250uA, V <sub>GS</sub> = V <sub>DS</sub> )	V <sub>GS(th)</sub>	-0.4	-0.62	-1	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V <sub>GS</sub> =0V, V <sub>DS</sub> = -20V)	I <sub>DSS</sub>	—	—	1	uA
Gate Body Leakage 栅极漏电流(V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V)	I <sub>GSS</sub>	—	—	±15	uA
Static Drain-Source On-State Resistance 静态漏源导通电阻(I <sub>D</sub> = -5A, V <sub>GS</sub> = -4.5V) (I <sub>D</sub> = -4A, V <sub>GS</sub> = -2.5V)	R <sub>DS(ON)</sub>	—	31 41	42 55	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I <sub>SD</sub> = -5A, V <sub>GS</sub> =0V)	V <sub>SD</sub>	—	—	-1.2	V
Input Capacitance 输入电容 (V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)	C <sub>ISS</sub>	—	1180	—	pF
Common Source Output Capacitance 共源输出电容(V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)	C <sub>OSS</sub>	—	125	—	pF
Reverse Transfer Capacitance 反馈电容(V <sub>GS</sub> =0V, V <sub>DS</sub> = -10V, f=1MHz)	C <sub>RSS</sub>	—	88	—	pF
Total Gate Charge 栅极电荷密度 (V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)	Q <sub>g</sub>	—	11	—	nC
Gate Source Charge 栅源电荷密度 (V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)	Q <sub>gs</sub>	—	2	—	nC
Gate Drain Charge 栅漏电荷密度 (V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -4.5V)	Q <sub>gd</sub>	—	3	—	nC
Turn-ON Delay Time 开启延迟时间 (V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)	t <sub>d(on)</sub>	—	14	—	ns
Turn-ON Rise Time 开启上升时间 (V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)	t <sub>r</sub>	—	10	—	ns
Turn-OFF Delay Time 关断延迟时间 (V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)	t <sub>d(off)</sub>	—	20	—	ns
Turn-OFF Fall Time 关断下降时间 (V <sub>DS</sub> = -10V I <sub>D</sub> = -1A, R <sub>GEN</sub> =2.5 Ω, V <sub>GS</sub> = -4.5V)	t <sub>f</sub>	—	30	—	ns

■ Typical Characteristic Curve 典型特性曲线

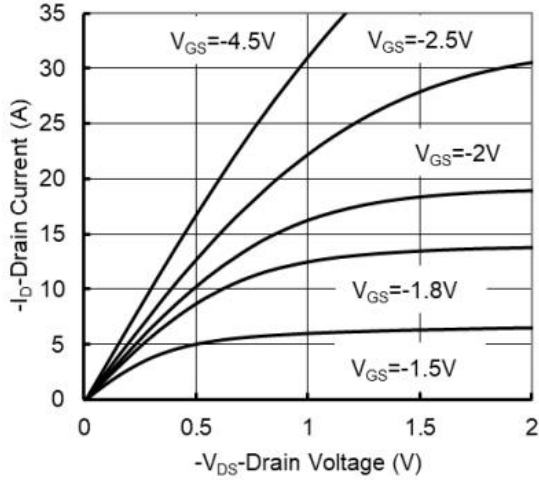


Figure 1: Output Characteristics

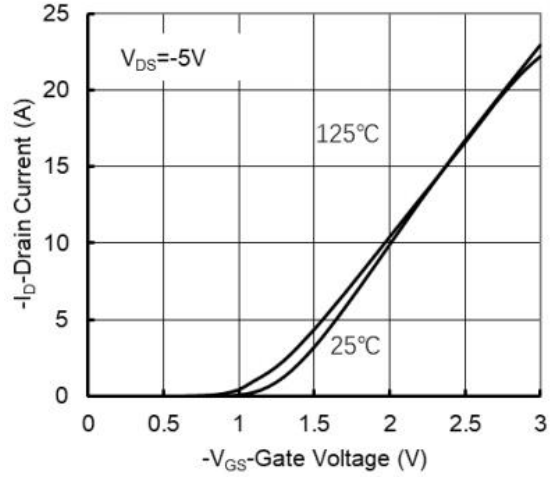


Figure 2: Transfer Characteristics

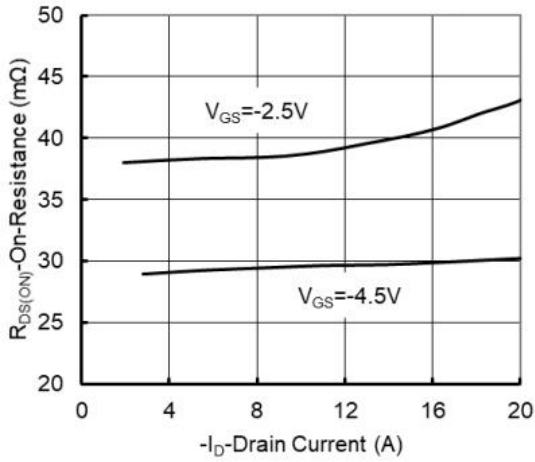


Figure 3: On-Resistance vs. Drain Current

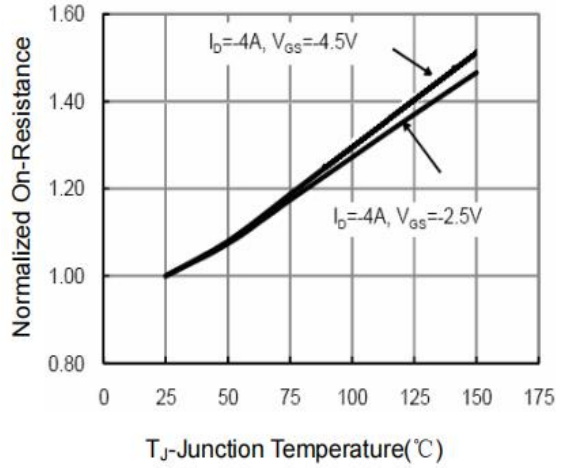


Figure 4: On-Resistance vs. Temperature

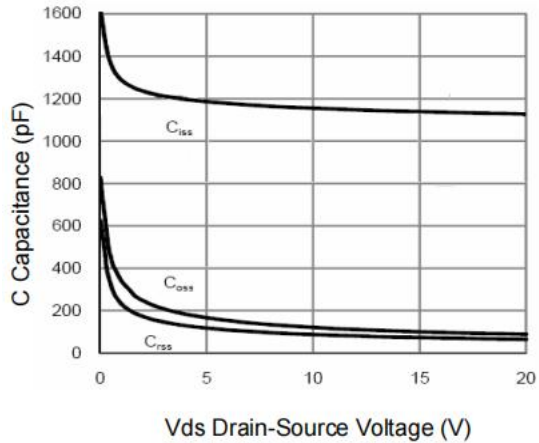


Figure 5: Capacitance Characteristics

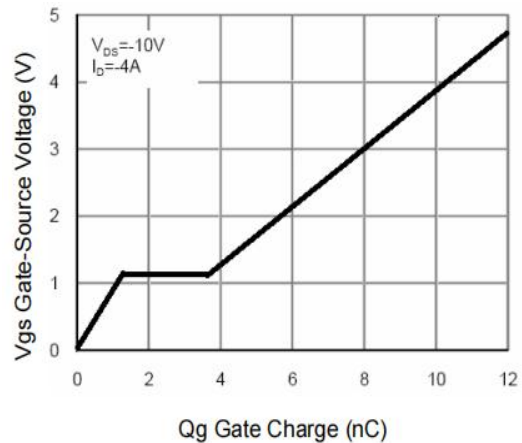


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

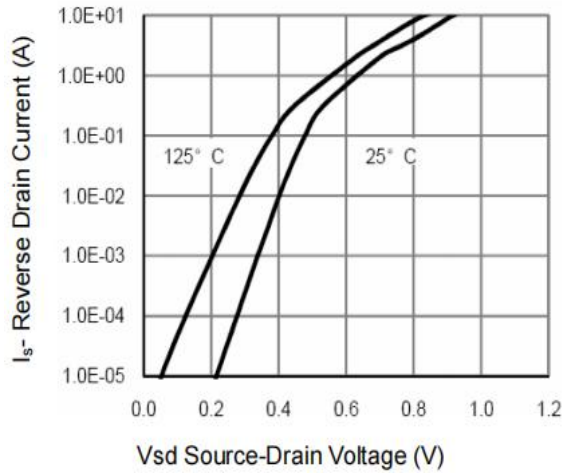


Figure 7: Diode Characteristics

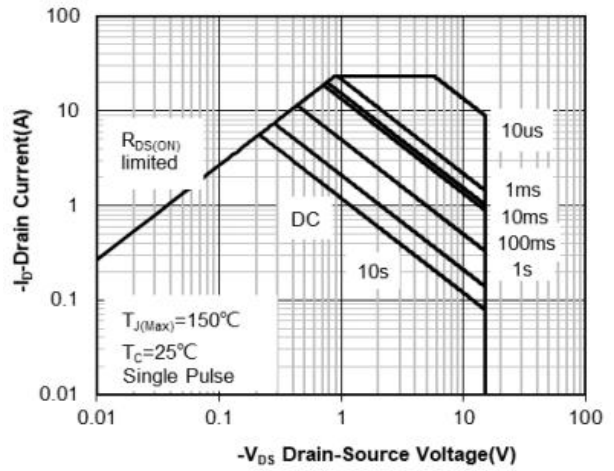


Figure 8: Safe Operating Area

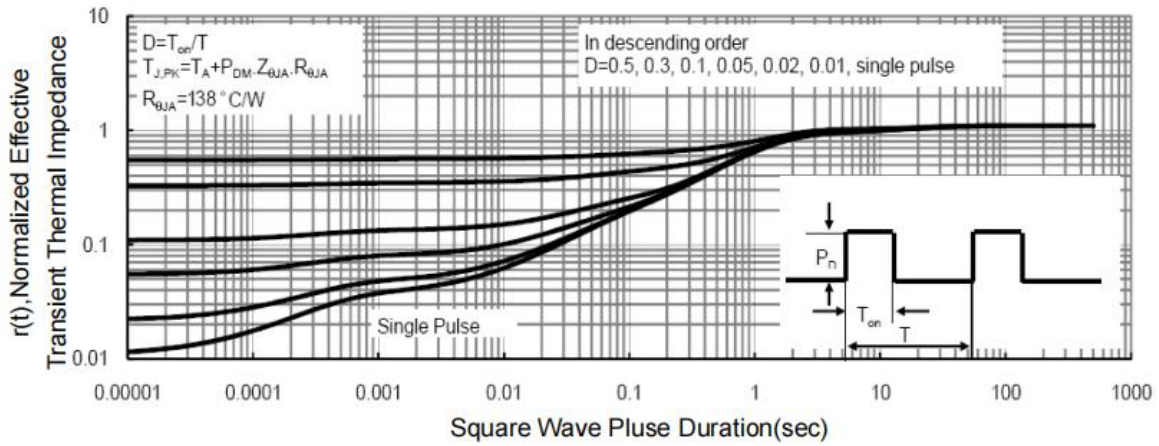
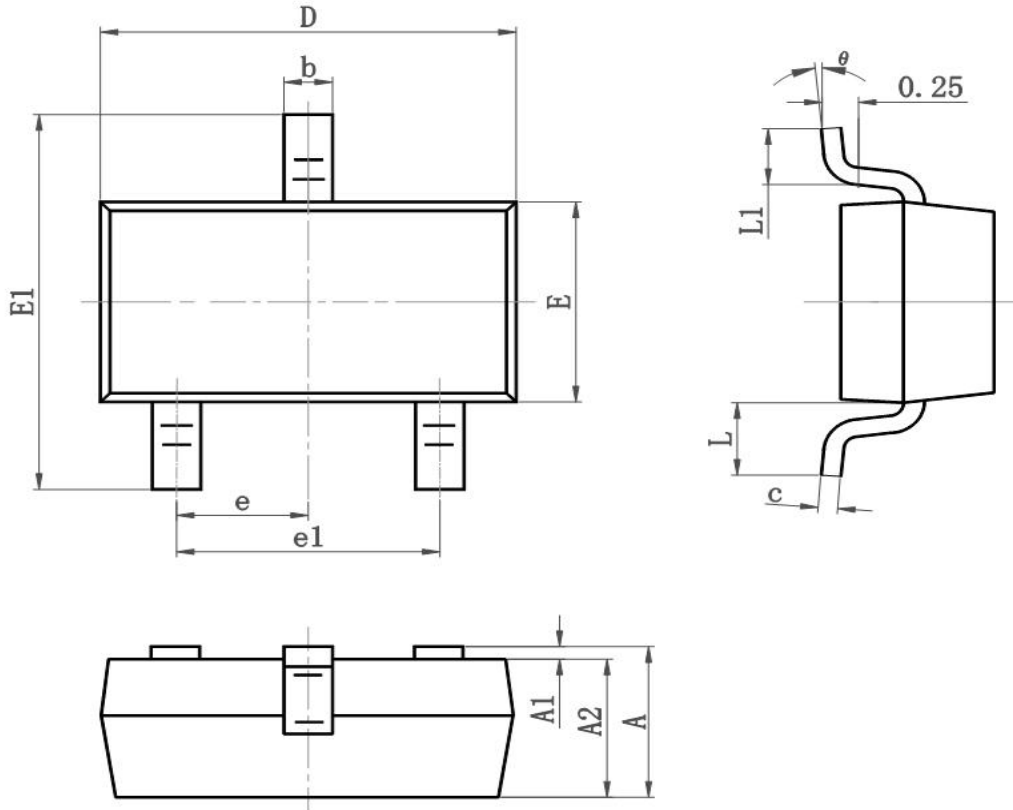


Figure 9: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.050	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

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