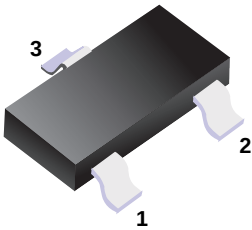


AO3416

N-Channel Enhancement MOSFET

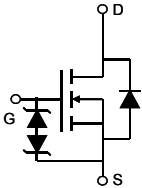
Features

- $V_{DS} (V) = 20V$
- $I_D = 6.5 A (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 22m\Omega (V_{GS} = 4.5V)$
- $R_{DS(ON)} < 26m\Omega (V_{GS} = 2.5V)$
- $R_{DS(ON)} < 34m\Omega (V_{GS} = 1.8V)$



- 1. Gate
- 2. Source
- 3. Drain

Simplified outline(SOT23-3L)



Absolute Maximum Ratings $T_a = 25^{\circ}C$

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current	$T_a=25^{\circ}C$	I_D	6.5	A
	$T_a=70^{\circ}C$		5.2	
Pulsed Drain Current		I_{DM}	30	
Power Dissipation	$T_a=25^{\circ}C$	P_D	1.4	W
	$T_a=70^{\circ}C$		0.9	
Thermal Resistance..Junction- to-Ambient $t \leq 10sec$ Steady State		R_{thJA}	90	$^{\circ}C/W$
			125	
Thermal Resistance..Junction-to-Foot		R_{thJF}	80	
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, V _{GS} =0V	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
		V _{DS} =20V, V _{GS} =0V, Ta=70°C			5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	0.4	0.7	1.1	V
On-State Drain Current	I _{D(on)}	V _{DS} =5 V, V _{GS} = 4.5 V	30			A
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =6.5A		16	22	mΩ
		V _{GS} =4.5V, I _D =6.5A TJ=125°C		22	30	
		V _{GS} =2.5V, I _D =5.5A		18	26	
		V _{GS} =1.8V, I _D =5A		21	34	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =6.5A		50		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f=1MHz		1295	1650	pF
Output Capacitance	C _{oss}			160		
Reverse Transfer Capacitance	C _{rss}			87		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.8		KΩ
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =6.5A		10		nC
Gate Source Charge	Q _{gs}			4.2		
Gate Drain Charge	Q _{gd}			2.6		
Turn-On DelayTime	t _{d(on)}	V _{DS} =10V, V _{GEN} =4.5V R _L =1.54Ω, R _G =3Ω		280		ns
Turn-On Rise Time	t _r			328		
Turn-Off DelayTime	t _{d(off)}			3.76		
Turn-Off Fall Time	t _f			2.24		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 6.5A, dI/dt= 100A/ μ s		31	41	nC
Body Diode Reverse Recovery Charg	Q _{rr}			6.8		
Maximum Body-Diode Continuous Current	I _s				2	A
Diode Forward Voltage	V _{SD}	I _s =1.0A, V _{GS} =0V		0.62	1	V

*1 Pulse test: PW ≤ 300us duty cycle ≤ 2%.

Typical Characteristics

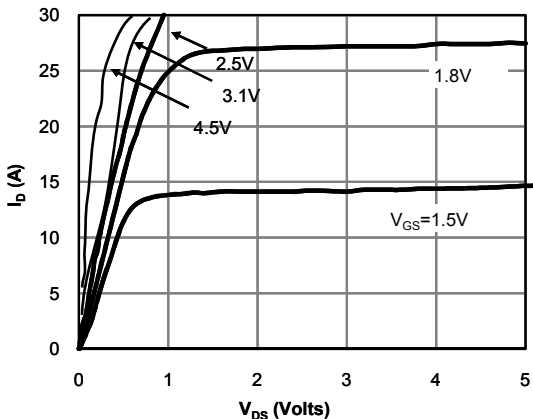


Figure 1: On-Region Characteristics (Note E)

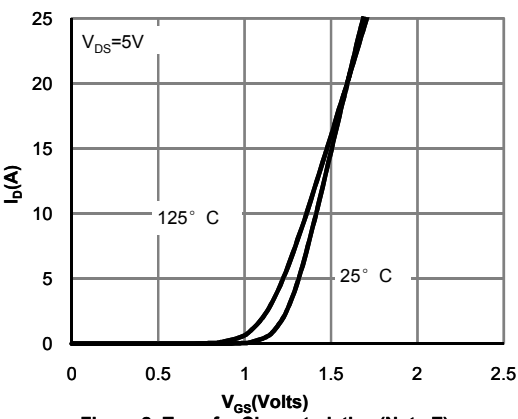


Figure 2: Transfer Characteristics (Note E)

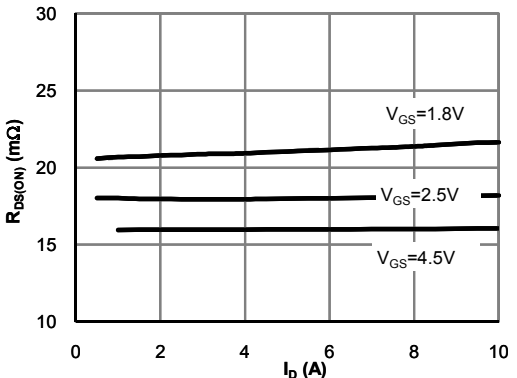


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

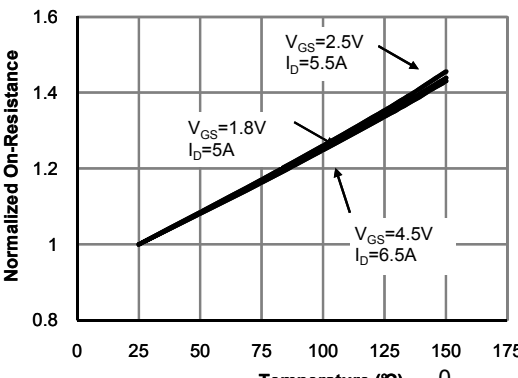


Figure 4: On-Resistance vs. Junction Temperature (Note E)

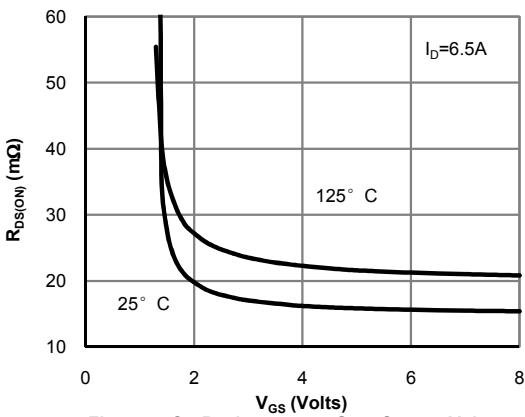


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

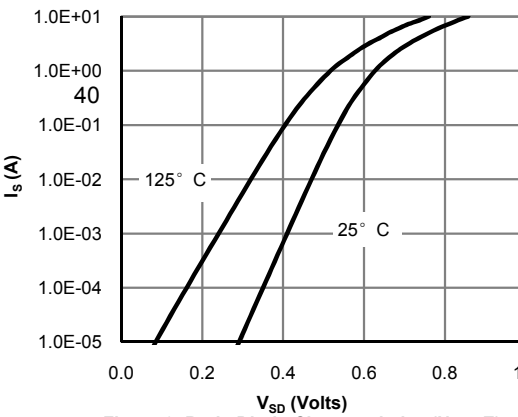
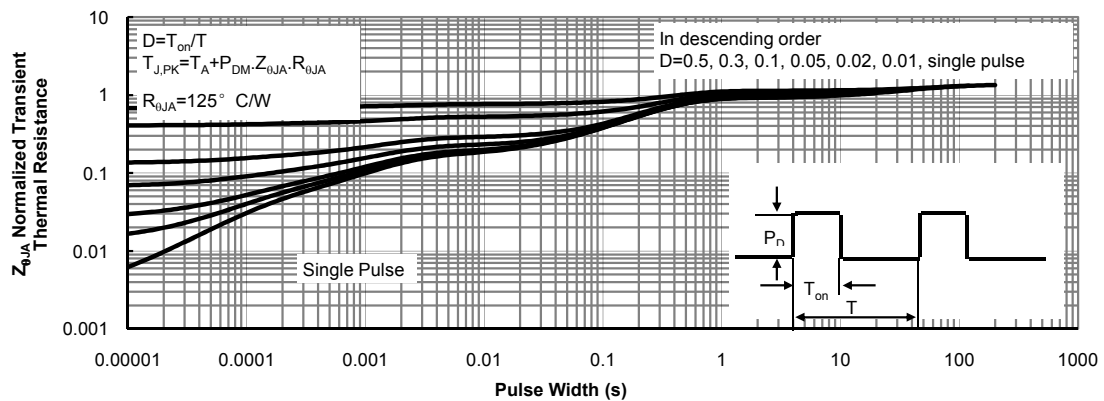
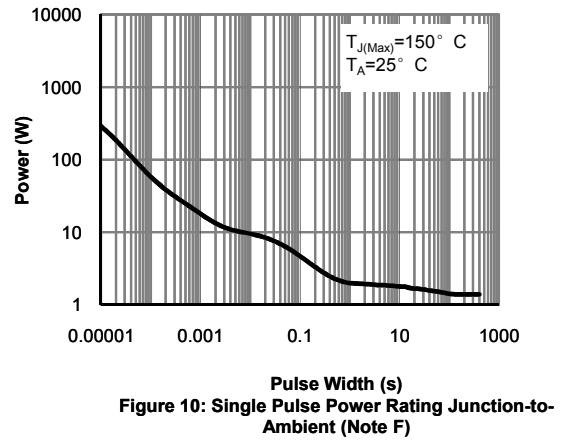
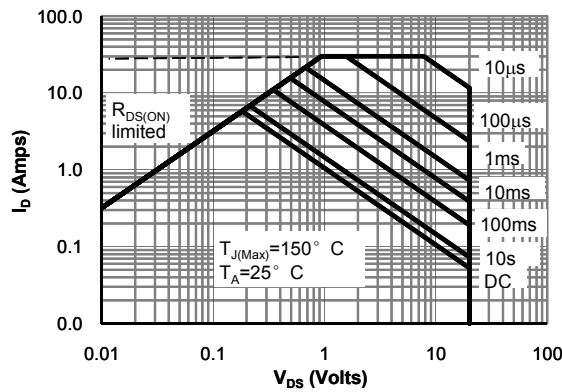
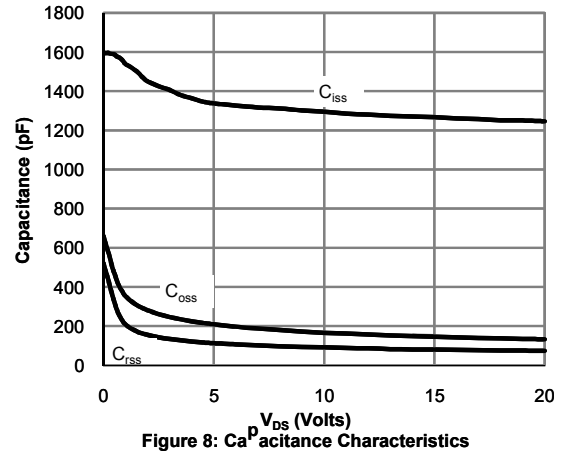
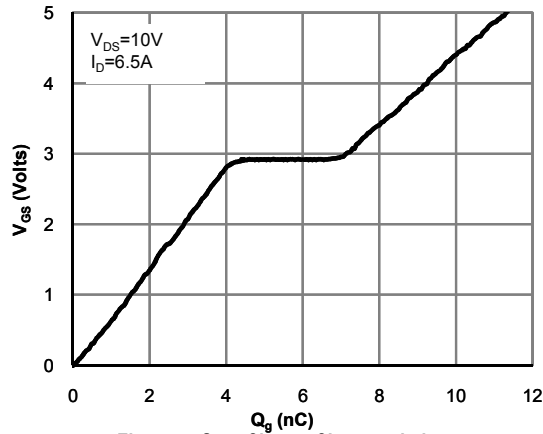
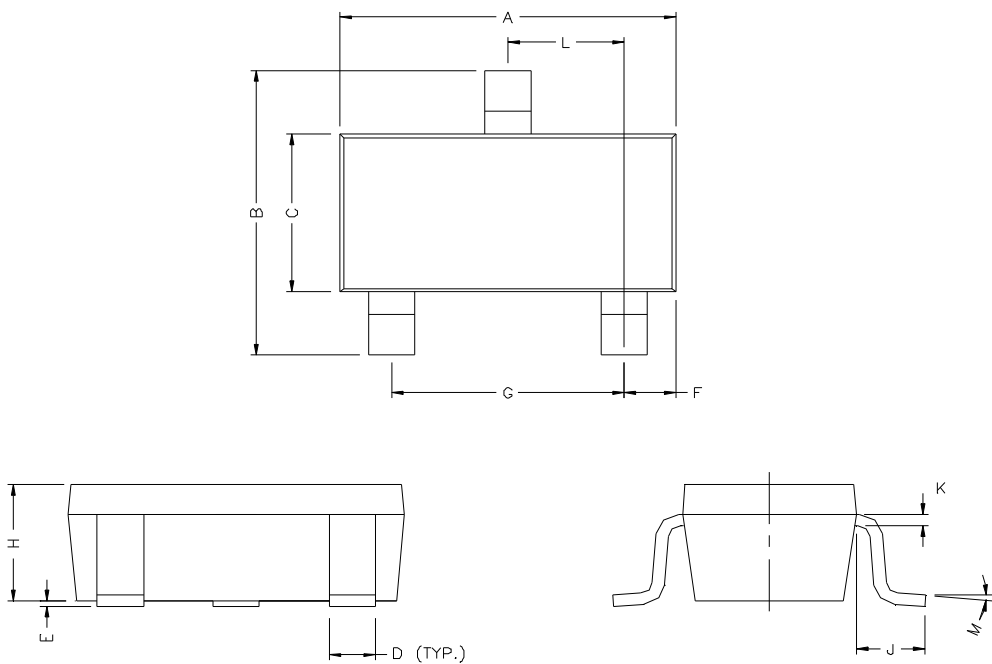


Figure 6: Body-Diode Characteristics (Note E)

■ Typical Characteristics



■ SOT23-3L



DIMENSIONS (mm are the original dimensions)

UNIT	A	B	C	D	E	F	G	H	K	J	L	M
mm	2.70 3.10	2.65 2.95	1.50 1.70	0.35 0.50	0 0.10	0.45 0.55	1.9	1.00 1.30	0.10 0.20	0.40 -	0.85 1.15	0° 10°