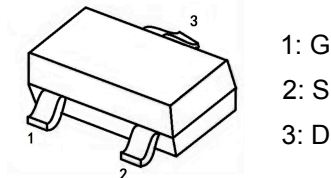


20V N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 22m\Omega$ (17m Ω Typ.)
@ $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 36m\Omega$ (26m Ω Typ.)
@ $V_{GS}=2.5V$

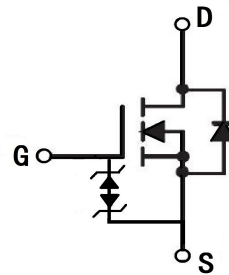
SOT-23



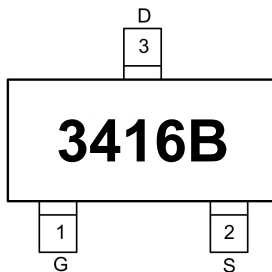
APPLICATIONS

- Load Switch
- PWM Application
- Power management

N-CHANNEL MOSFET



MARKING



Other mark: "AGSA"

MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current	$T_A = 25^\circ C$	5 A
		$T_A = 100^\circ C$	3.3 A
I_{DM}	Pulsed Drain Current ^{note1}	20	A
P_D	Power Dissipation	$T_A = 25^\circ C$	0.9 W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	139	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V,$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}= \pm 10V$	-	-	± 10	μA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.7	1	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS}=4.5V, I_D=5A$	-	17	22	m Ω
		$V_{GS}=2.5V, I_D=3A$	-	26	36	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	545	-	pF
C_{oss}	Output Capacitance		-	103	-	pF
C_{rss}	Reverse Transfer Capacitance		-	90	-	pF
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=5A,$ $V_{GS}=4.5V$	-	8	-	nC
Q_{gs}	Gate-Source Charge		-	2.5	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	3	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=10V, R_L=1.5\Omega,$ $R_{GEN}=3\Omega, V_{GS}=5V$	-	0.5	-	ns
t_r	Turn-on Rise Time		-	1	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	12	-	ns
t_f	Turn-off Fall Time		-	4	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	20	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=5A$	-	-	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1: Output Characteristics

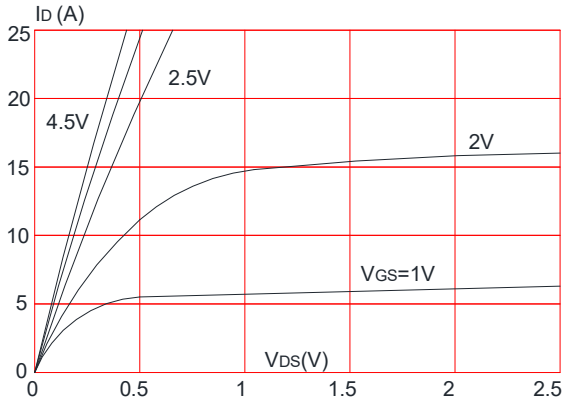


Figure 2: Typical Transfer Characteristics

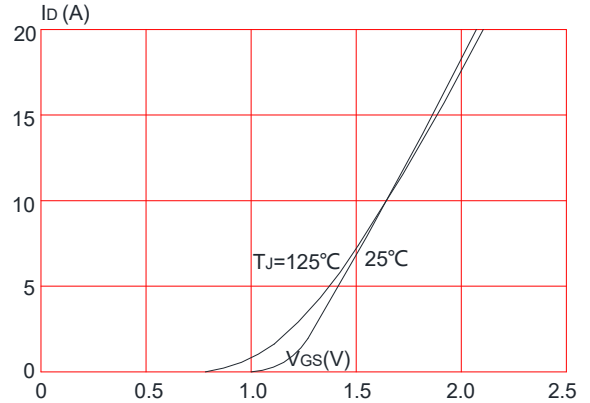


Figure 3: On-resistance vs. Drain Current

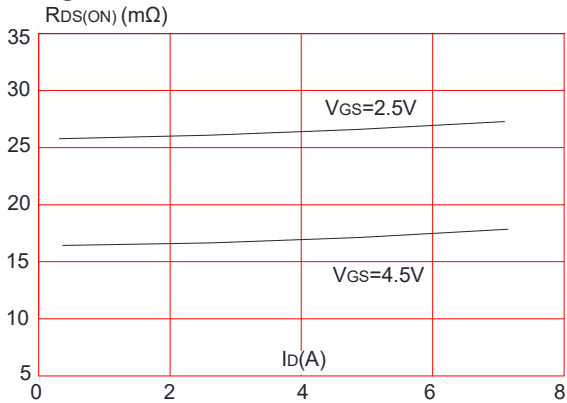


Figure 4: Body Diode Characteristics

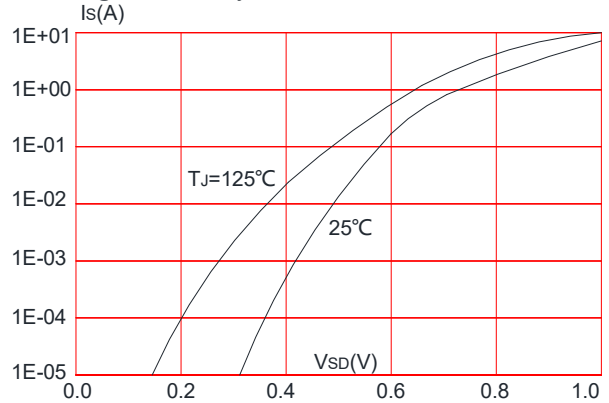


Figure 5: Gate Charge Characteristics

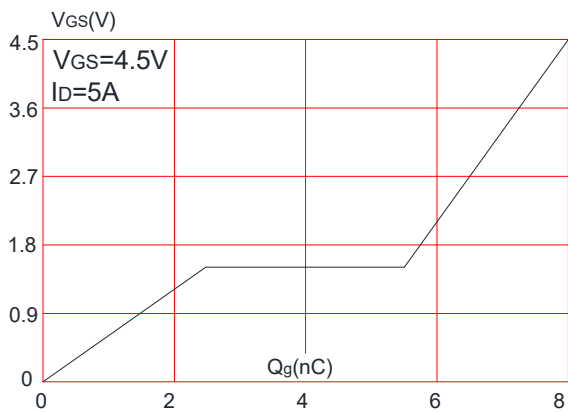
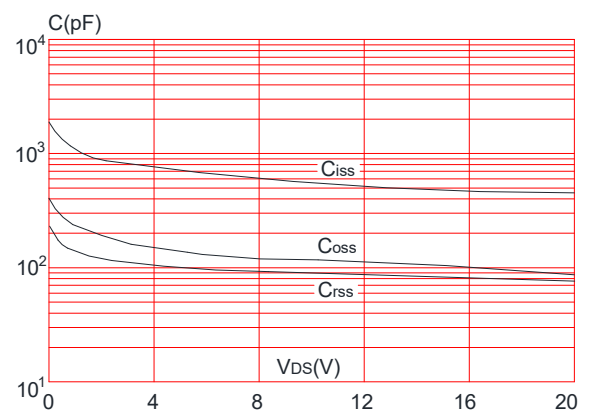


Figure 6: Capacitance Characteristics



TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

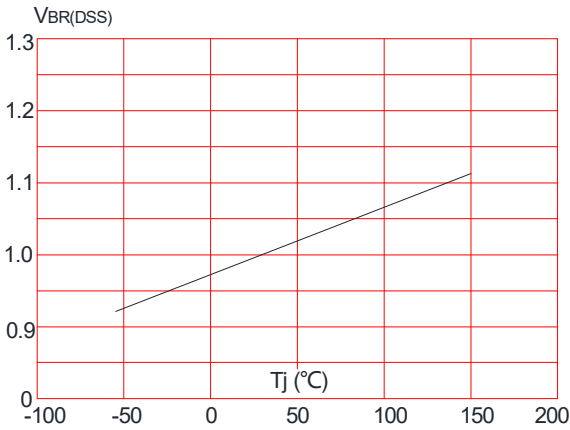


Figure 8: Normalized on Resistance vs. Junction Temperature

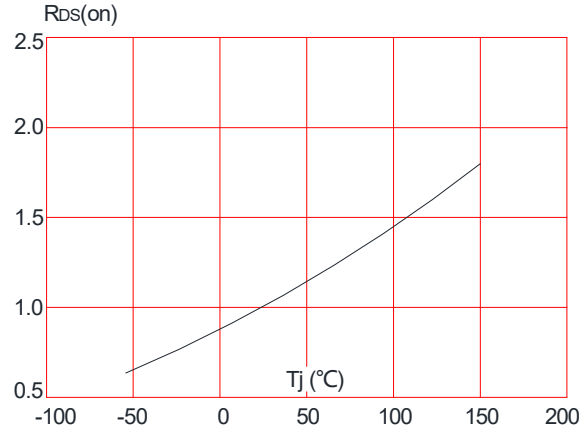


Figure 9: Maximum Safe Operating Area

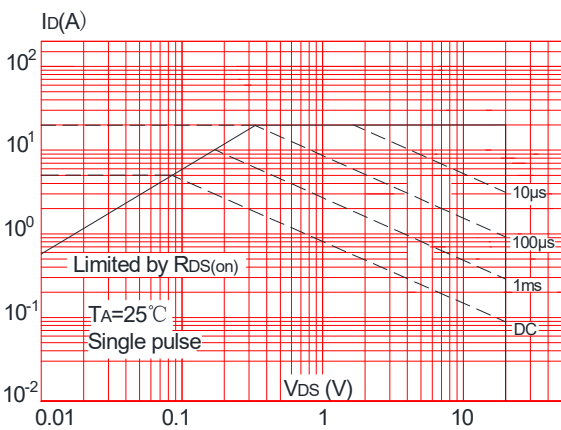


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

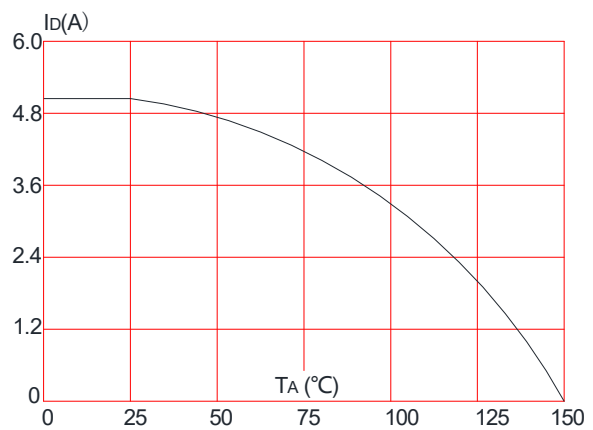
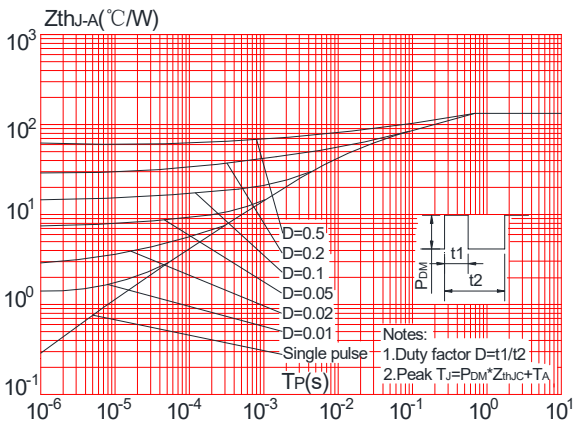
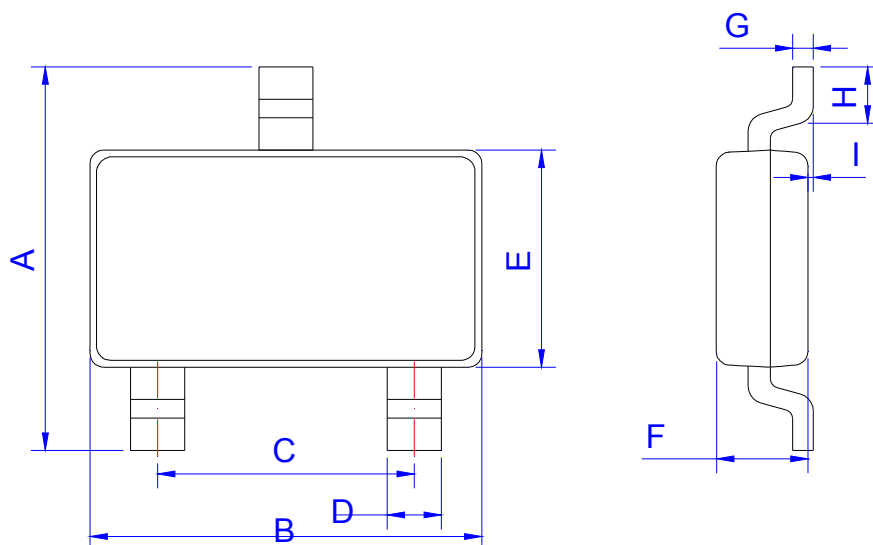


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT-23 PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004