





N-Channel MOSFET

Drain Source Voltage - 20V
Continuous Drain Current - 5.2A

Features

- $V_{DS} = 20V$, $I_D = 5.2A$
- $R_{DS(ON)} < 27\ m\Omega$ @ $V_{GS} = 4.5V$
- Very Low On-Resistance $R_{DS(ON)}$
- Lead Free Product is Acquired
- Fast Switching and Low Crss

Mechanical Data

- Case: SOT23 Package
 - Case Material: UL Flammability Classification Rating 94V-0
 - Halogen Free
 - Component in Accordance to RoHS
- Note: Products with logo  or  are made by HY Electronic (Cayman) Limited.

Ordering Information

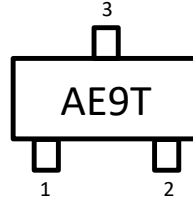
- Package :SOT23
- Reel Size :7 (inches)
- Quantity Per Reel :3,000 pcs
- Quantity One Box :45,000 pcs
- Quantity One Carton :180,000 pcs

Package Outline



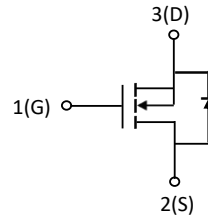
SOT23 Top View

Marking Information



"AE9T" = Product Type Marking Code

Device Schematic & PIN Configuration



Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_C = 25^\circ\text{C}$	5.2
		$T_C = 70^\circ\text{C}$	3.0
Pulsed Drain Current ^(*)	I_{DM}	16.4	A
Power Dissipation	P_D	1.0	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	170	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	- 55 to 150	$^\circ\text{C}$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	300	$^\circ\text{C}$

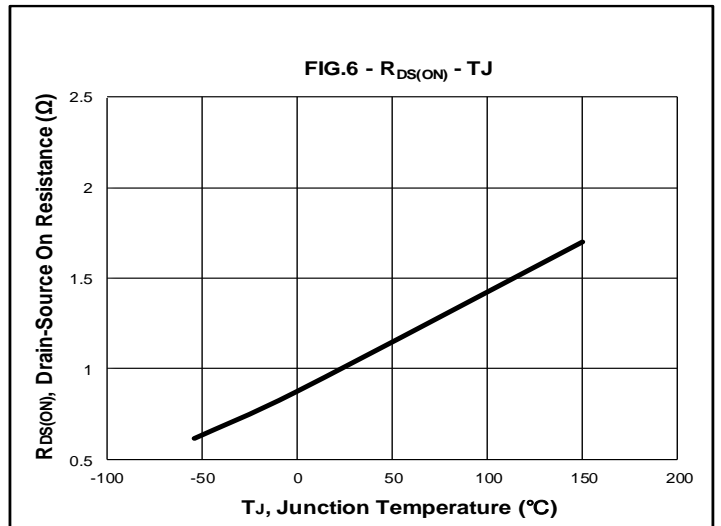
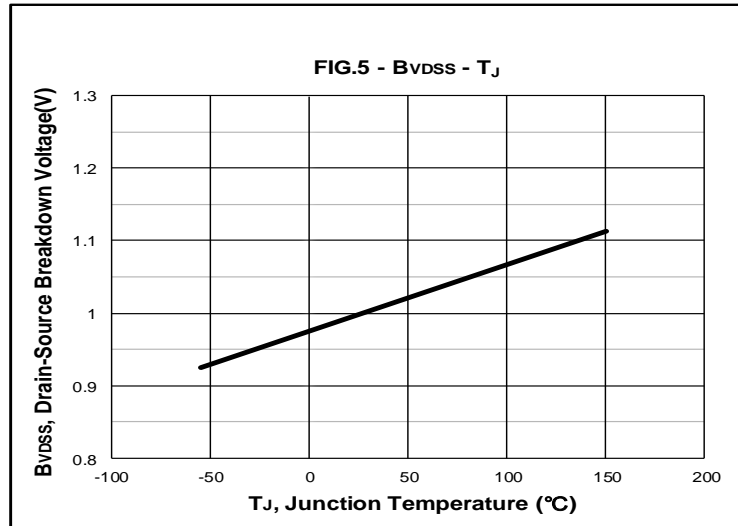
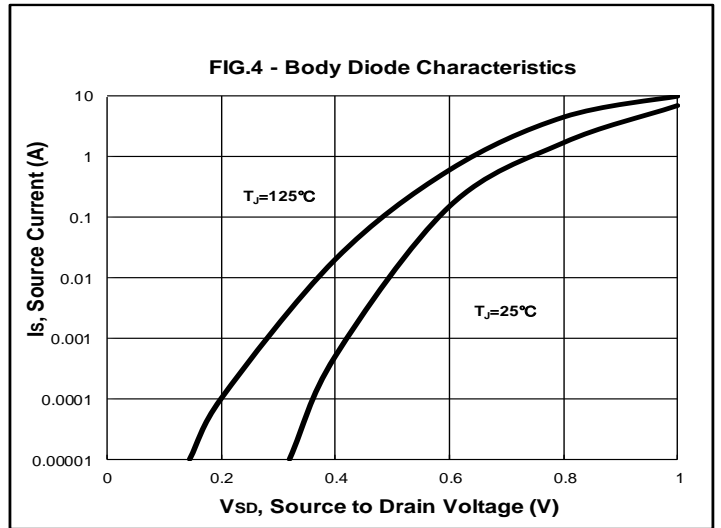
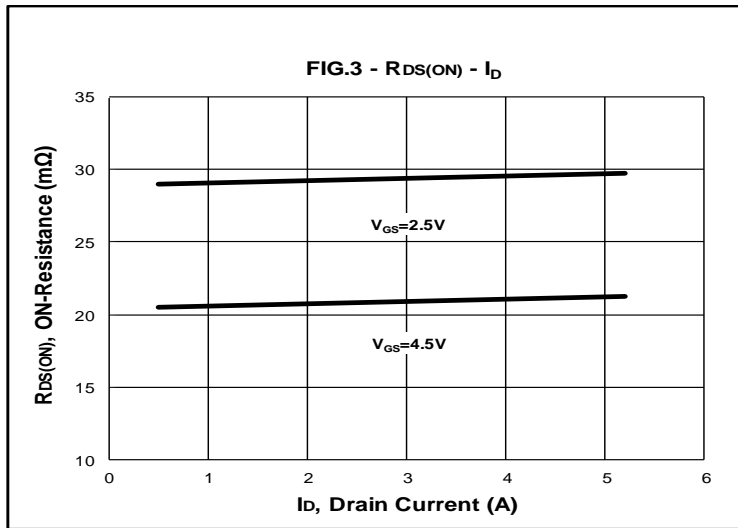
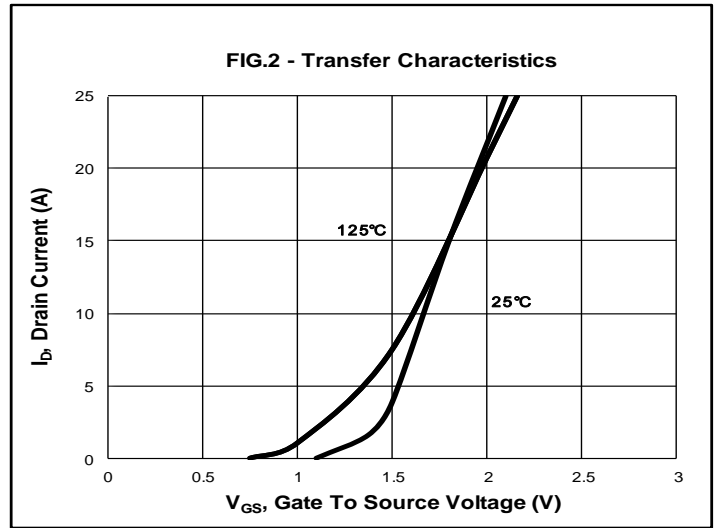
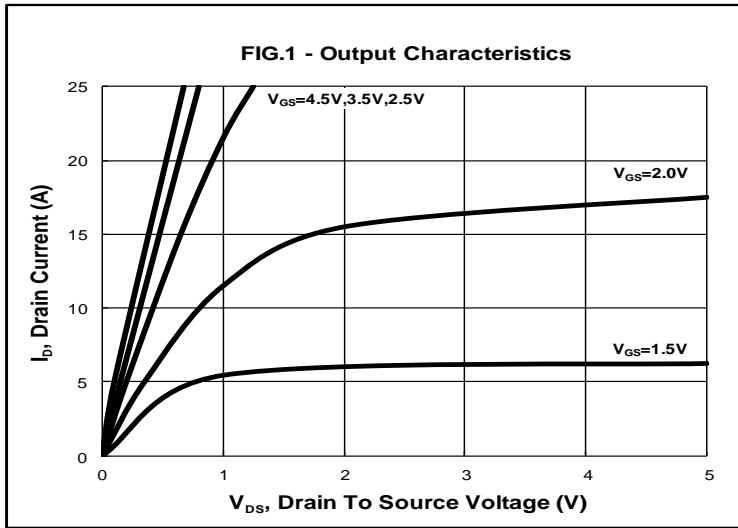
Notes : Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature.

Electrical Characteristics (@T_J = +25°C, unless otherwise specified.)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	BV _{DSS}	20	-	-	V
Gate-Body Leakage Current, Forward	V _{GS} =±12V, V _{DS} =0V	I _{GSS}	-	-	±100	nA
Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	I _{DSS}	-	-	1	μA
	V _{DS} =16V, T _C =125°C		-	-	10	μA
On Characteristics						
Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	V _{GS(th)}	0.4	0.7	1.0	V
Static Drain-Source	V _{GS} =4.5V, I _D =4A		-	21	27	mΩ
On-Resistance	V _{GS} =2.5V, I _D =3A	R _{DS(on)}	-	29	44	
Dynamic Characteristics						
Input Capacitance	V _{DS} =10V, V _{GS} =0V, F=1MHz	C _{iss}	-	358	-	pF
Output Capacitance		C _{oss}	-	69	-	
Reverse Transfer Capacitance		C _{rss}	-	58	-	
Switching Characteristics						
Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =2A	Q _g	-	5.6	-	nC
Gate Source Charge		Q _{gs}	-	0.8	-	
Gate Drain Charge		Q _{gd}	-	1.0	-	
Turn-On Delay Time	V _{DS} =10V, V _{GS} =4.5V, I _D =4A, R _G =3Ω	t _{d(on)}	-	5	-	ns
Turn-On Rise Time		t _r	-	30	-	
Turn-Off Delay Time		t _{d(off)}	-	48	-	
Turn-Off Fall Time		t _f	-	36	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain-Source Diode Forward Current		I _S	-	-	5.0	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}	-	-	16	A
Drain to Source Diode Forward Voltage	V _{GS} =0V, I _{SD} =4A, T _J =25°C	V _{SD}	-	-	1.2	V



Rating and Characteristic Curves





Rating and Characteristic Curves

FIG.7 - Capacitance Characteristics

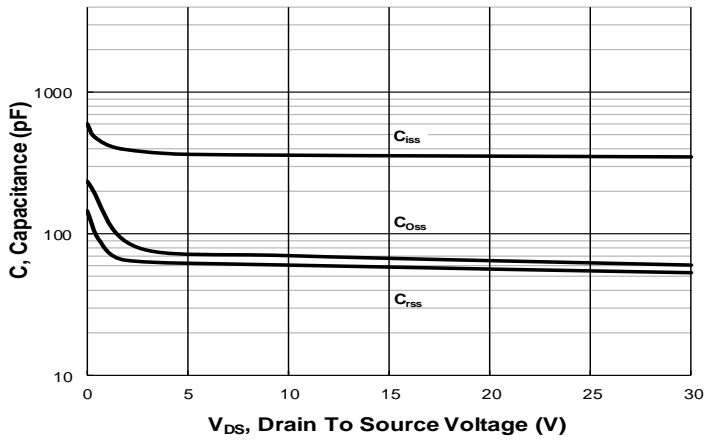


FIG.8 - Gate Charge Characteristics

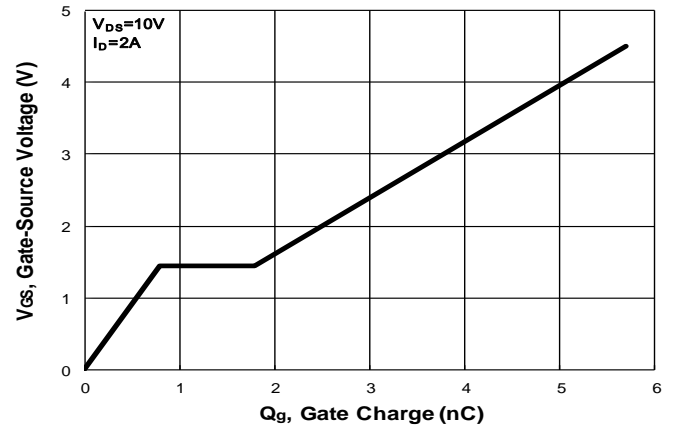


FIG.9 - $I_D - T_A$

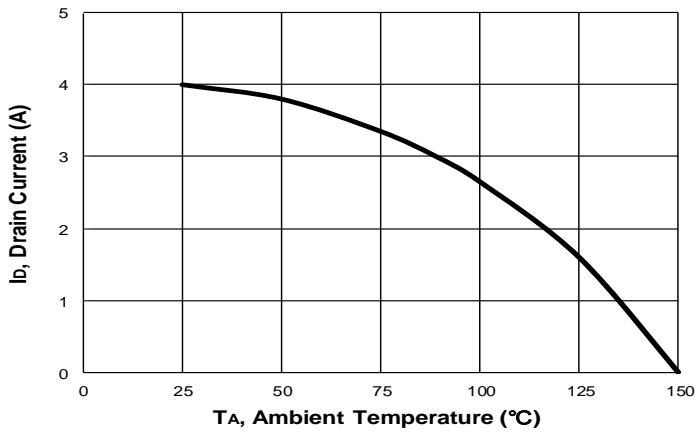
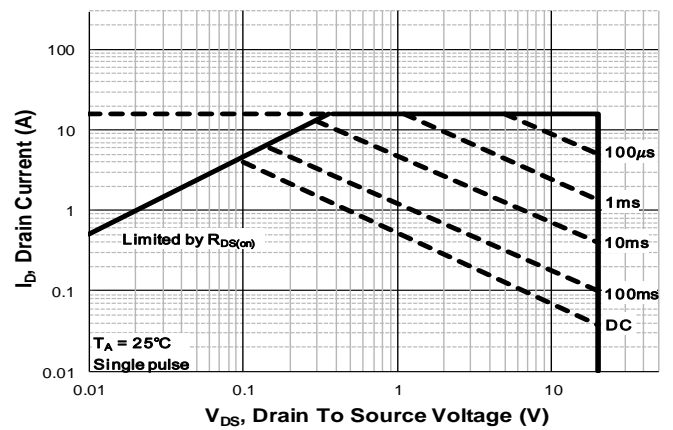
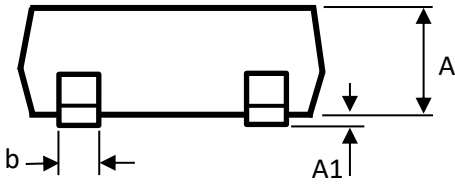
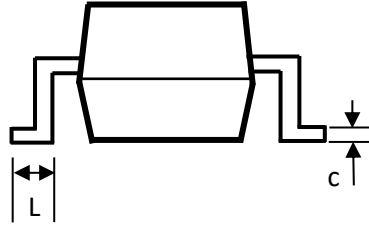
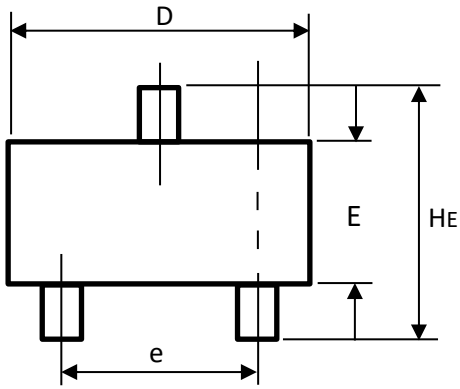


FIG.10 - Maximum Safe Operating Area





Package Outline Dimensions



SOT23 Package		
Dim	Min	Max
A	0.87	1.07
A1	0.00	0.10
b	0.30	0.50
c	0.09	0.15
D	2.80	3.00
E	1.20	1.60
e	1.80	2.00
L	0.20	0.45
HE	2.25	2.55
All Dimensions in mm		



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