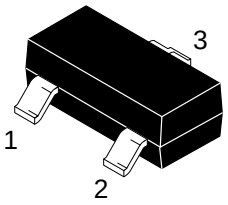
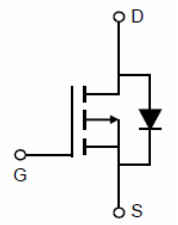
-20V/-3.0A P-Channel Advanced Power MOSFET

BVDSS	-20	V
ID	-3.0	A
RDSON@VGS=-4.5V	49.0	mΩ
RDSON@VGS=-3.3V	52.0	mΩ
RDSON@VGS=-2.5V	60.0	mΩ

SOT-23





Features

- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Applications

- PWM Applications
- Load Switch
- Power Management

Order Information

Product	Package	Marking	Packing
AM20DP030T	SOT23	A1SHB	3000PCS/Reel

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A= 25℃	-3.0	A
		T_A= 70℃	-2.5	
I_{DM}	Pulsed Drain Current note1		-12	A
P_D	Power Dissipation	T_A= 25℃	1.2	W
		T_A= 70℃	0.9	
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		100	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-50 to +150	℃

Electrical Characteristics (T_C=25℃ 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= -250μA	-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} = ±10V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-0.4	-0.6	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-4.5V, I_D =-3.0A	-	49	60	mΩ
		V_{GS} =-3.3V, I_D =-2.0A	-	52	70	
		V_{GS} =-2.8V, I_D =-1.5A	-	56	80	
		V_{GS} =-2.5V, I_D =-1.0A	-	60	90	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz	-	330	-	pF
C_{oss}	Output Capacitance		-	50	-	pF
C_{rss}	Reverse Transfer Capacitance		-	45	-	pF
Q_g	Total Gate Charge	V_{DS} = -10V, I_D = -3.0A, V_{GS} = -4.5V	-	6.6	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -10V, I_D=-3A, R_{GEN}=3.3Ω, V_{GS}=-4.5V,	-	11	-	ns
t_r	Turn-on Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	18	-	ns
t_f	Turn-off Fall Time		-	30	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-2.5	A
I_{SD}	Source Drain Current (Body Diode)		-	-	-1.5	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -2.0A	-	-0.85	-1.2	V

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics

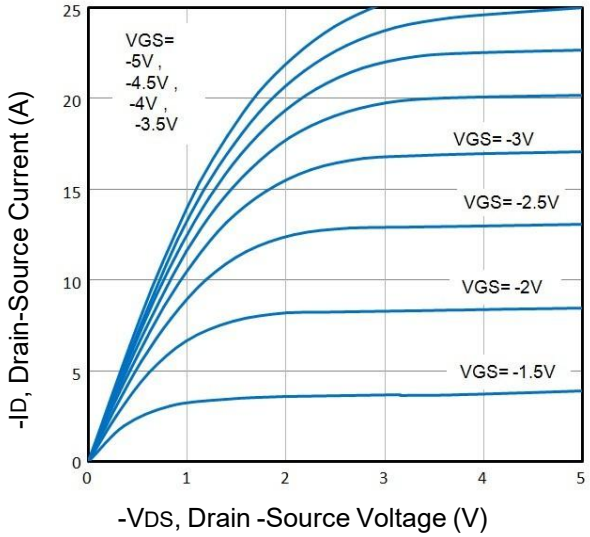


Fig1. Typical Output Characteristics

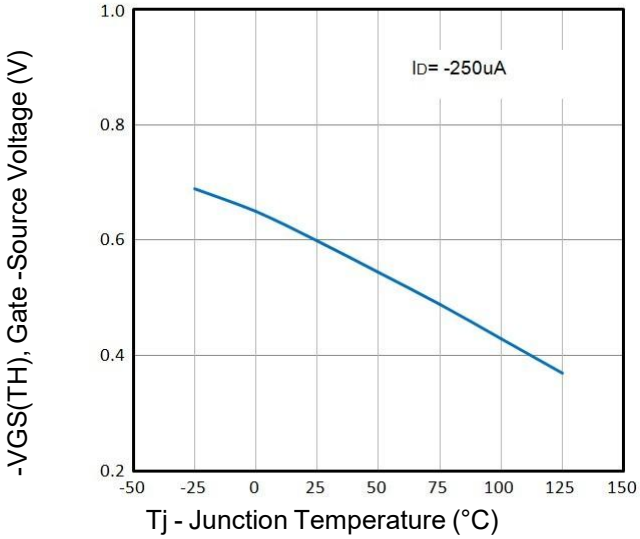


Fig2. Normalized Threshold Voltage Vs. Temperature

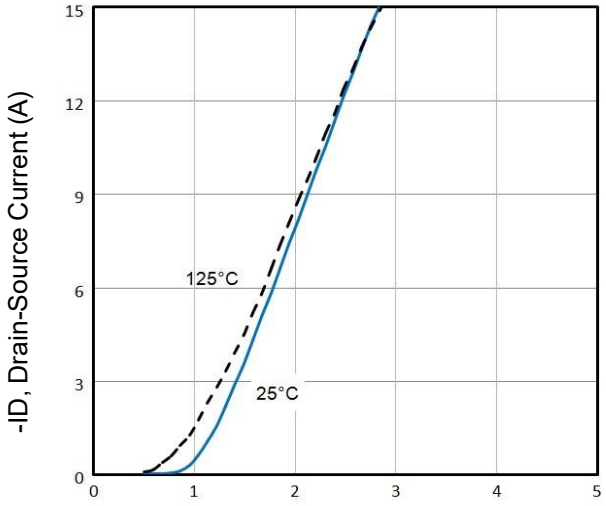


Fig3. Typical Transfer Characteristics

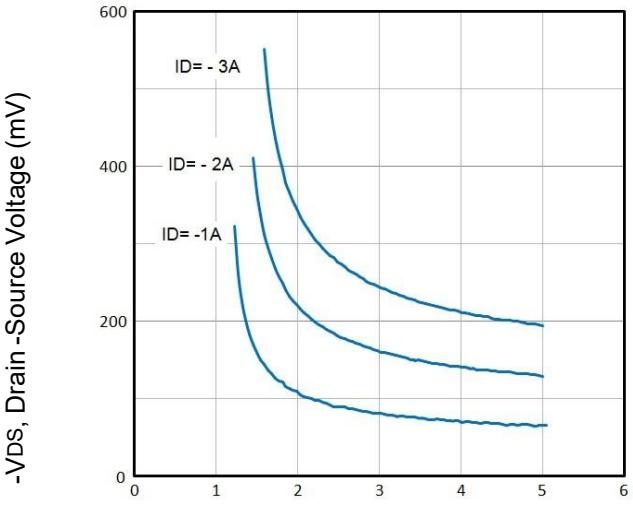


Fig4. Drain -Source Voltage vs Gate -Source Voltage

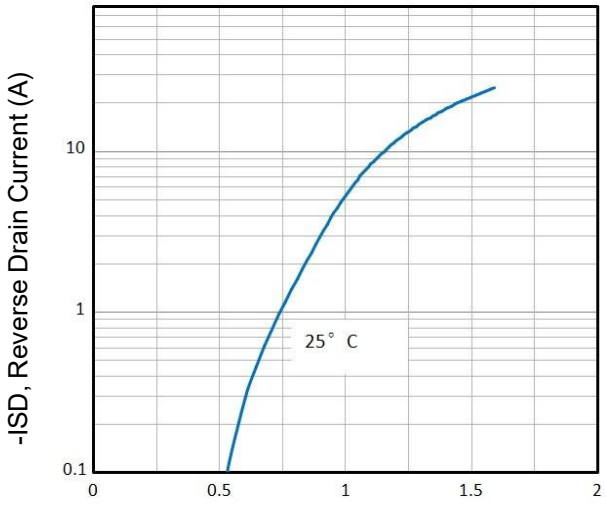


Fig5. Typical Source-Drain Diode Forward Voltage

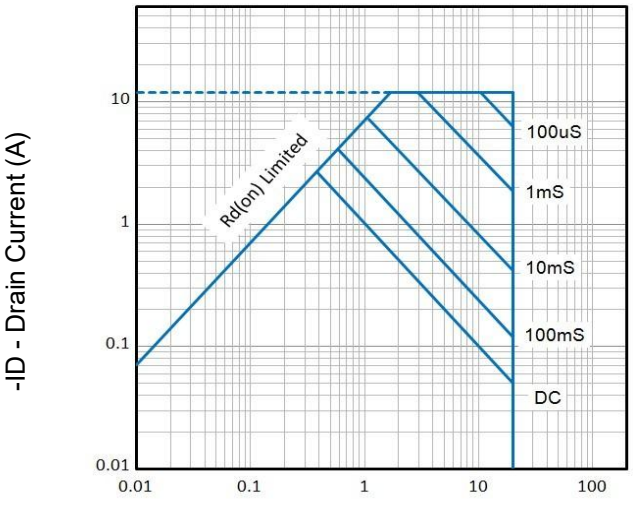


Fig6. Maximum Safe Operating Area

Typical Characteristics

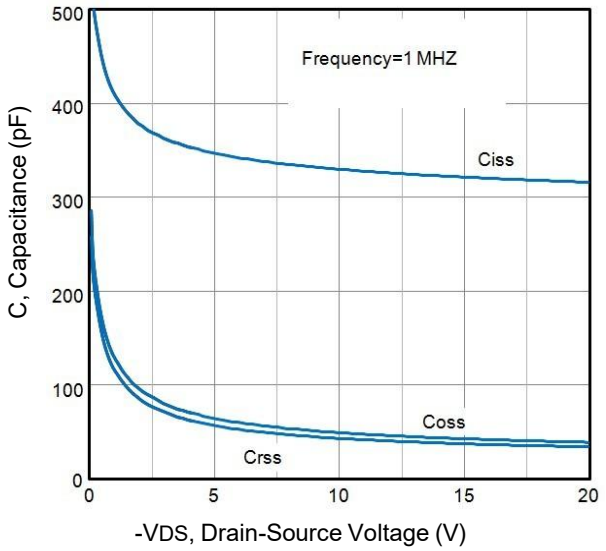


Fig7. Typical Capacitance Vs. Drain-Source Voltage

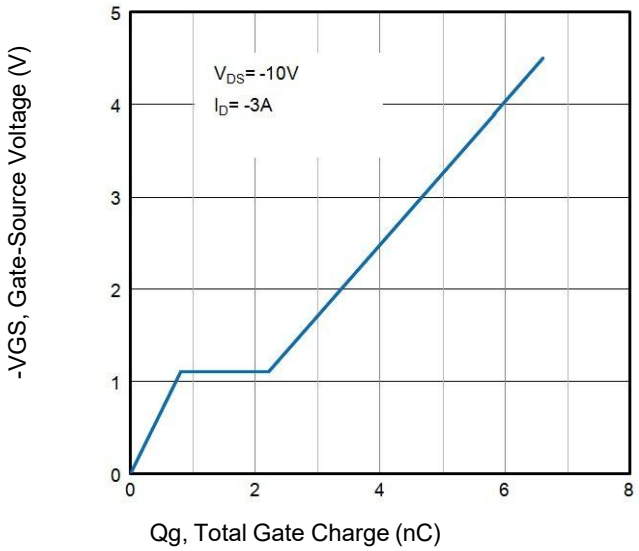


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

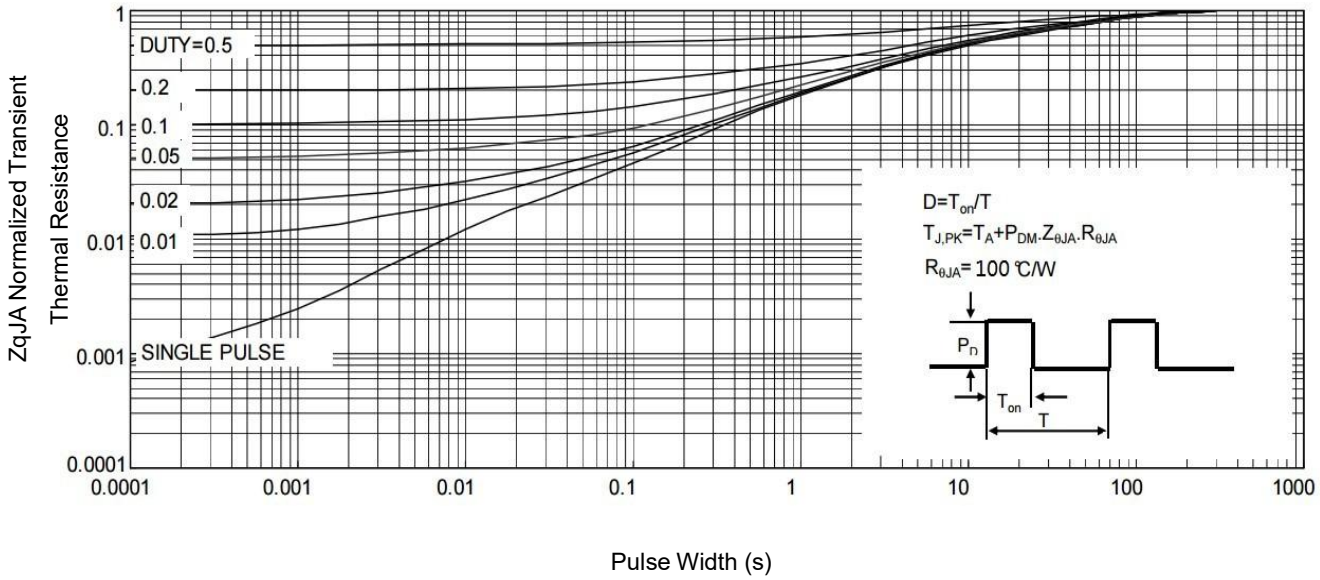


Fig9. Normalized Maximum Transient Thermal Impedance

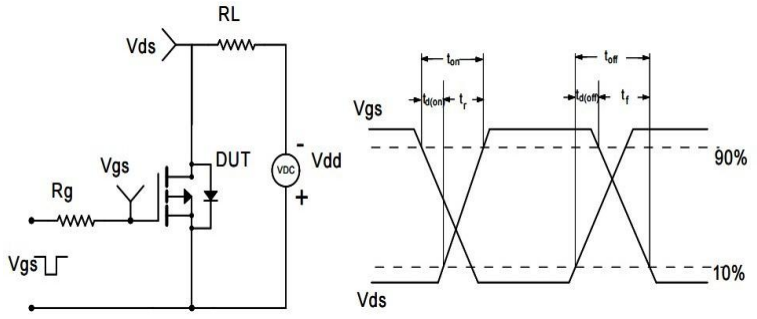
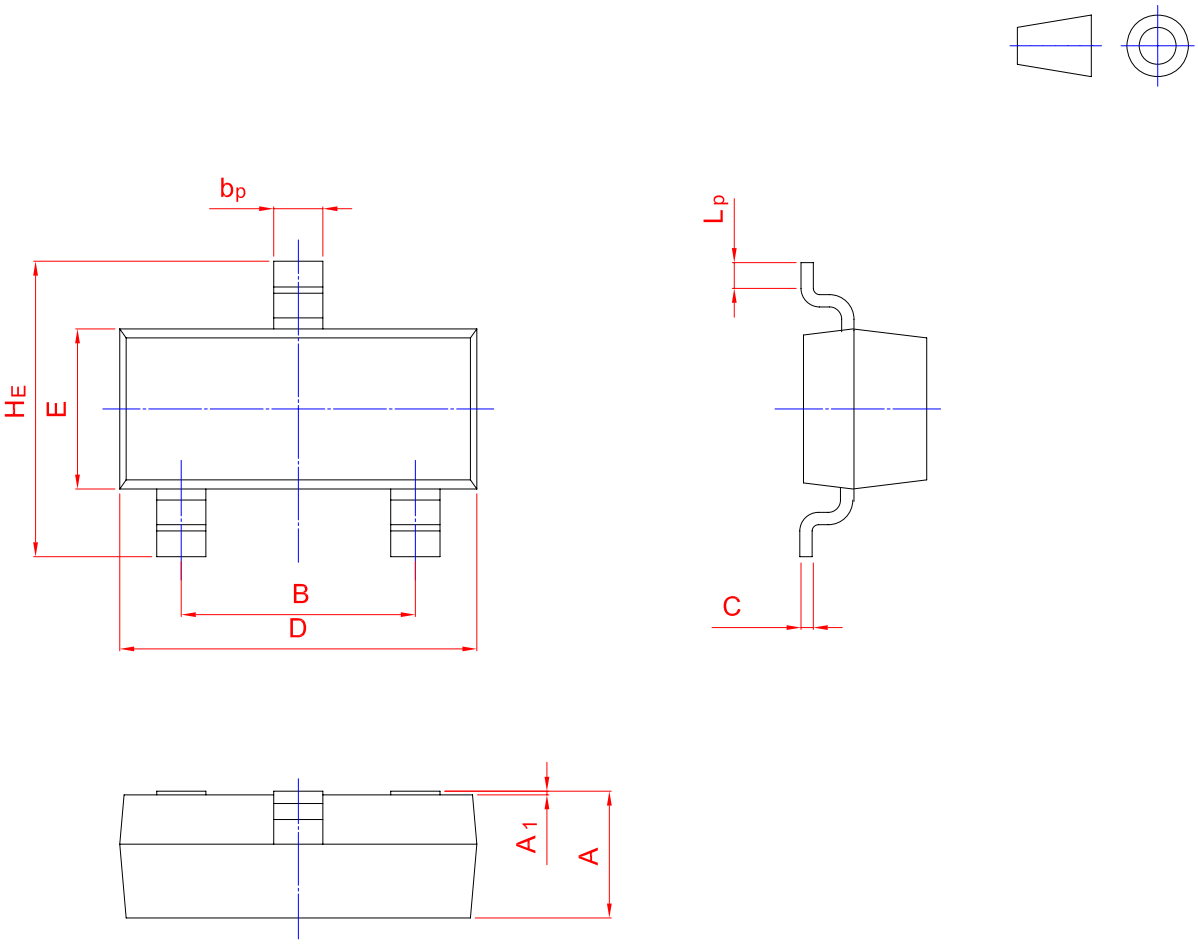


Fig10. Switching Time Test Circuit and waveforms

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

SOT-23 Suggested Pad Layout