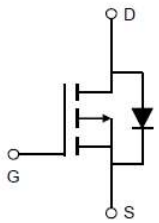
AP05P06A

P-Channel Enhancement Mosfet

DATA SHEET

Features

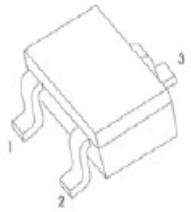
- -60V,-5A
  $R_{DS(ON)}$ <90mΩ @V_{GS}=-10V TYP:80mΩ
  $R_{DS(ON)}$ <120mΩ @V_{GS}=-4.5V TYP:105 mΩ
- Surface-mounted package
- Low gate charge



Schematic diagram

Applications

- Motor driver appliances
- Adapter appliances
- High power inverter system



SOT23-3

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
05P06A	AP05P06A	SOT23-3	-	-	3000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_c =25℃)	I_D	-5	A
Pulsed Drain Current [1]	I_{DM}	-12.8	A
Drain Power Dissipation	P_D	1.56	W
Thermal Resistance from Junction to Case[2]	$R_{\theta JC}$	2.5	℃/W
Thermal Resistance- Junction to Ambient[3]	$R_{\theta JA}$	80	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes:

1. Pulse width ≤ 300 μs, duty cycle ≤ 2 %
2. Mounted on PCB of 1 in2 pad area
3. Mounted on Large Heat Sink

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

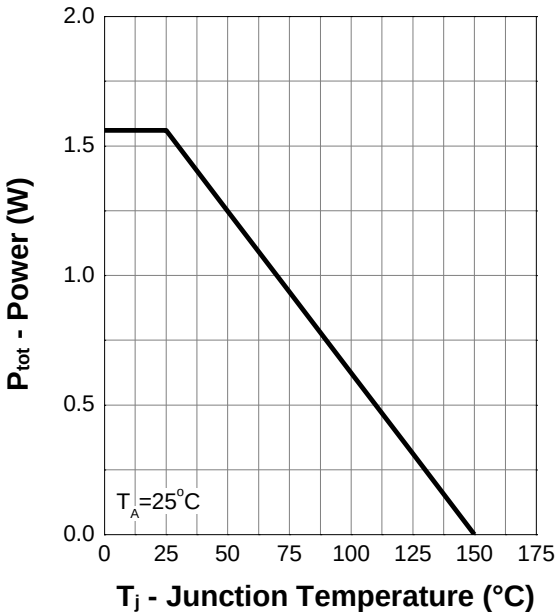
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-48V, V_{GS} = 0V	-	-	-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-2A	-	80	90	mΩ
		V_{GS} =-4.5V, I_D =-1A	-	105	120	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-30V, V_{GS} =0V, f =1.0MHz	-	934	-	pF
Output Capacitance	C_{oss}		-	44	-	
Reverse Transfer Capacitance	C_{rss}		-	37	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V, I_D=-2A, R_G=4.5Ω, V_G=-10V, R_L=15Ω	-	8.4	-	ns
Turn-on rise time	t_r		-	23	-	
Turn-off delay time	$t_{d(off)}$		-	109	-	
Turn-off fall time	t_f		-	48	-	
Total Gate Charge	Qg	V_{DS}=-30V, I_D=-2A, V_{GS}=-10V	-	16	-	nC
Gate-Source Charge	Qgs		-	3.8	-	
Gate-Drain Charge	Qgd		-	1.8	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_c=25℃, V_{GS} =0V, I_S=-2A	-	-	-1.3	V
Diode Forward current	I_S	T_c =25℃	-	-	-5	A
Body Diode Reverse Recovery Time	trr	T_c=25℃，IF=-2A,di/dt=100A/us		15		ns
Body Diode Reverse Recovery Charge	Qrr	T_c=25℃，IF=-2A,di/dt=100A/us		13		uc

Notes:

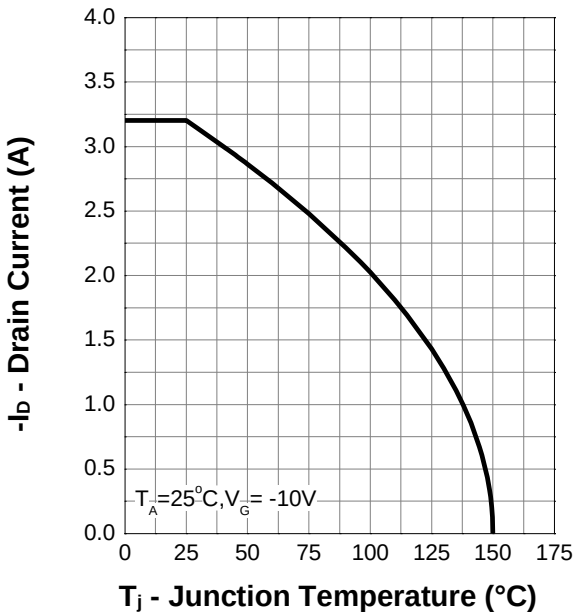
1. Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
2. Guaranteed by design, not subject to production testing

Typical Characteristics (Cont.)

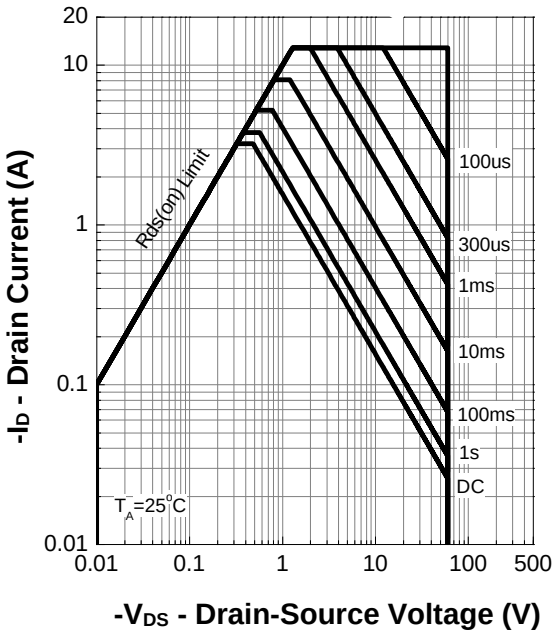
Power Capability



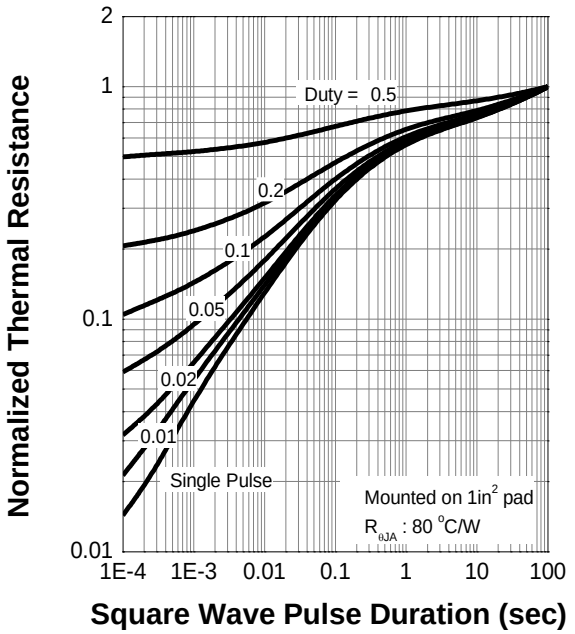
Current Capability



Safe Operating Area

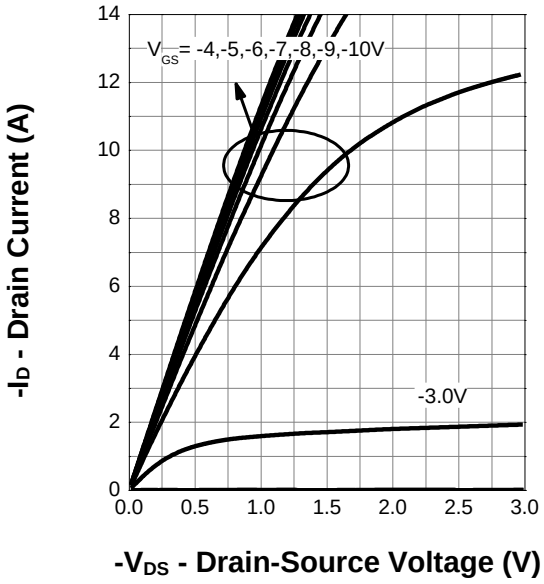


Transient Thermal Impedance

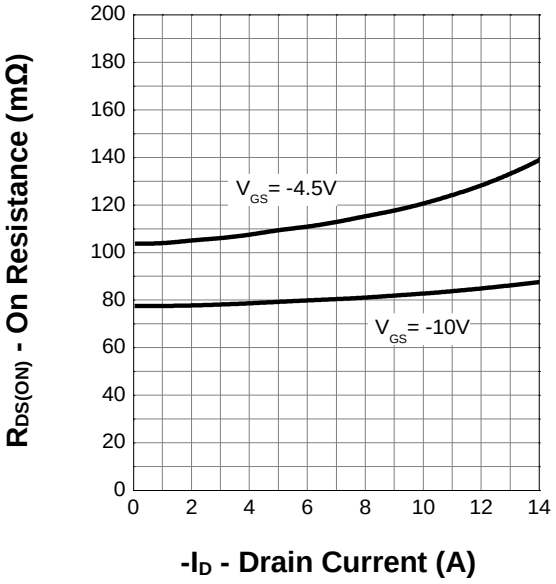


Typical Characteristics (Cont.)

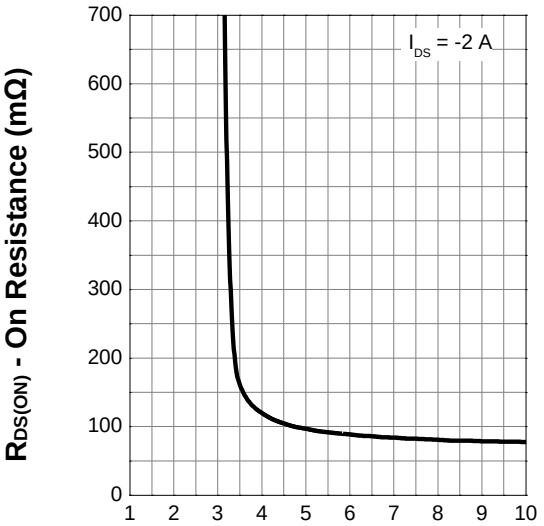
Output Characteristics



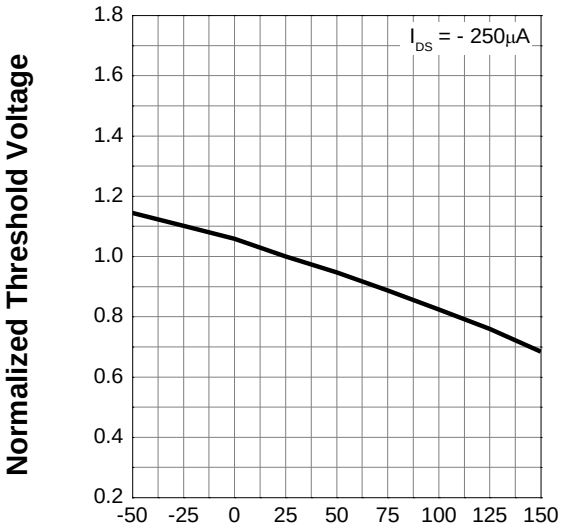
Drain-Source On Resistance



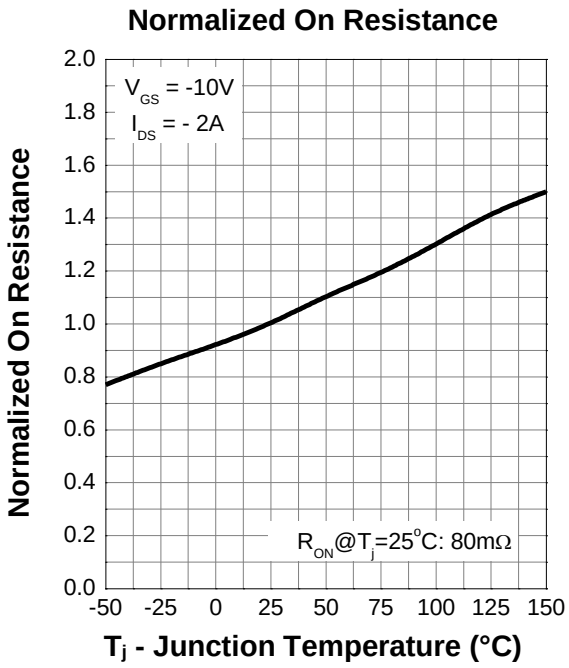
Transfer Characteristics

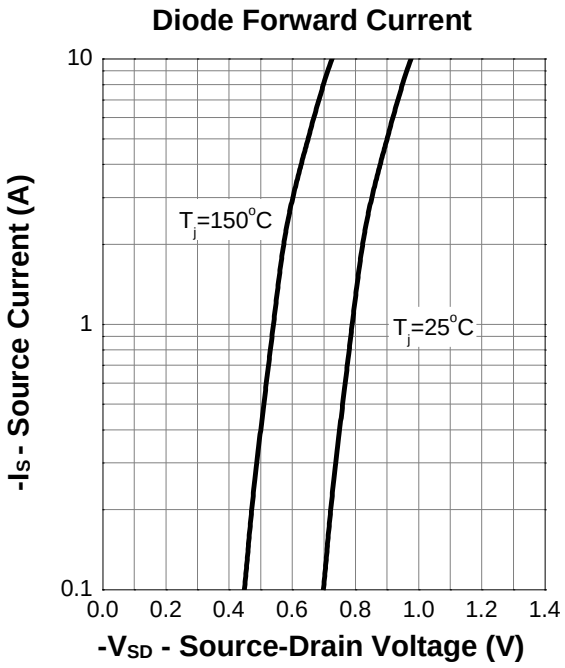


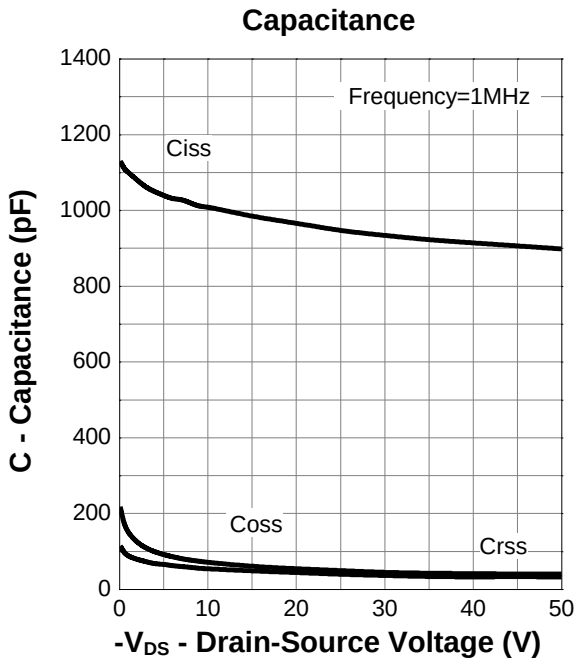
Normalized Threshold Voltage

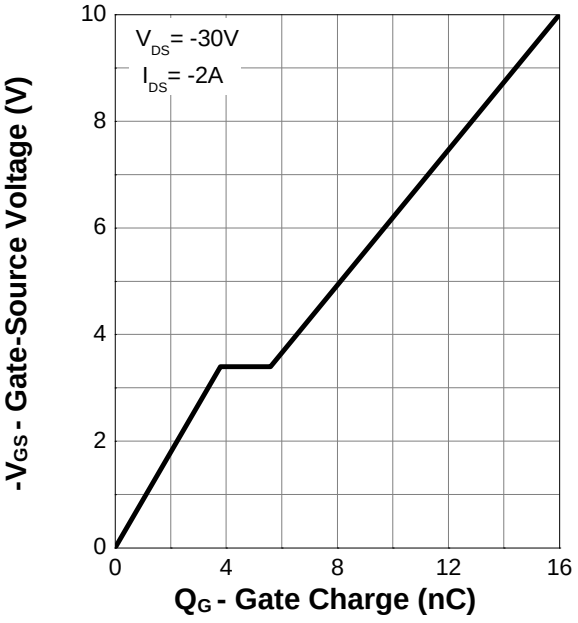


Typical Characteristics (Cont.)



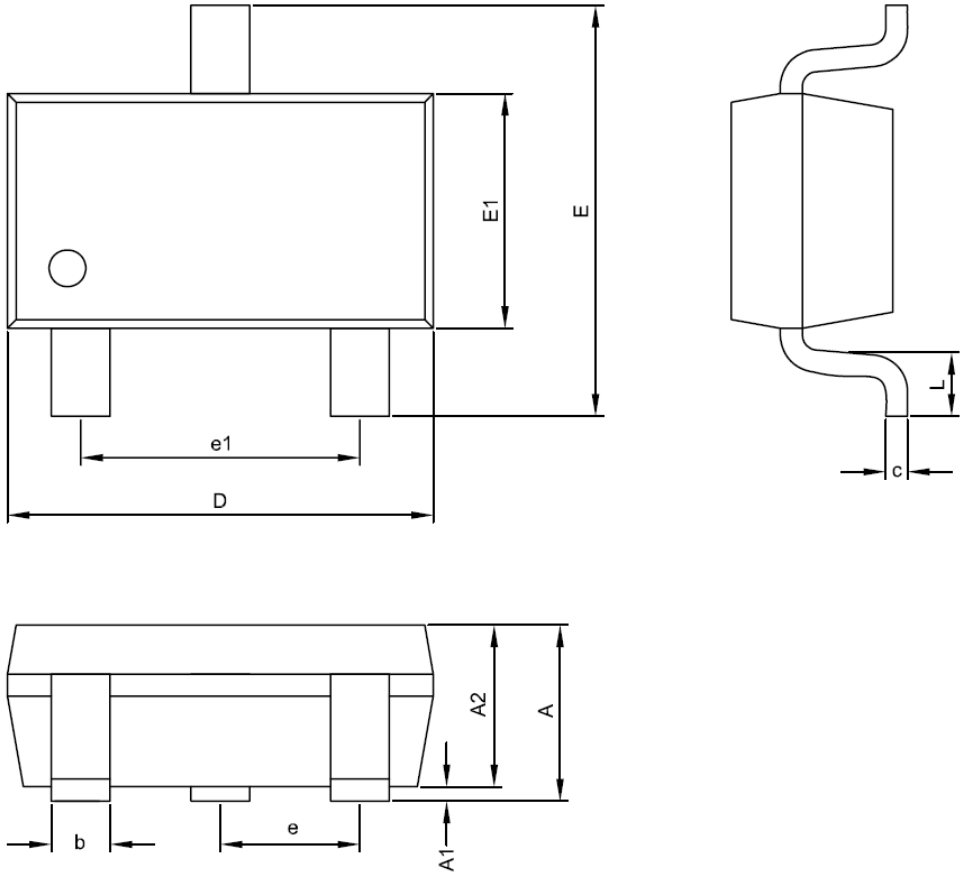






Package Dimensions

SOT23-3



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	1.00	1.45
A1	0.00	0.15
A2	1.00	1.30
D	2.70	3.10
E	2.60	3.00
E1	1.50	1.70
c	0.08	0.25
b	0.30	0.50
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60