

AP126P03K

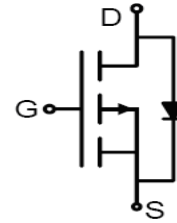
P-Channel Enhancement Mosfet

AIPOWER

DATA SHEET

Features

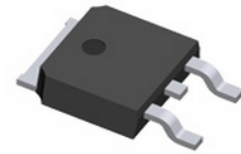
- -30V, -126A
 $R_{DS(ON)} < 3.9m\ \Omega @ V_{GS} = -10V$ TYP:3.1m Ω
 $R_{DS(ON)} < 6.0m\ \Omega @ V_{GS} = -4.5V$ TYP:4.6m Ω
- Advanced Trench Technology
- High Power and current handing capability
- Lead free product is acquired



Schematic Diagram

Applications

- Load Switch
- Synchronous Rectification



TO-252

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
126P03K	AP126P03K	TO-252	-	-	2500

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	-126	A
Continuous Drain Current ($T_c = 100^\circ\text{C}$)	I_D	-89	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-504	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	576	mJ
Drain Power Dissipation	P_D	107	W
Thermal Resistance from Junction to Case ⁽²⁾	$R_{\theta JC}$	1.4	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	45	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +175	$^\circ\text{C}$

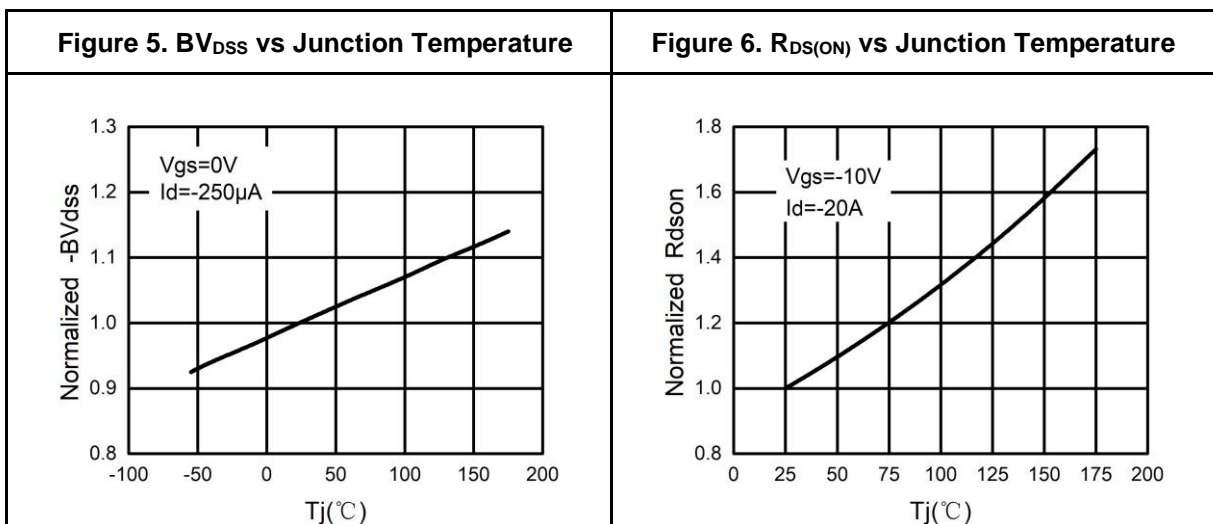
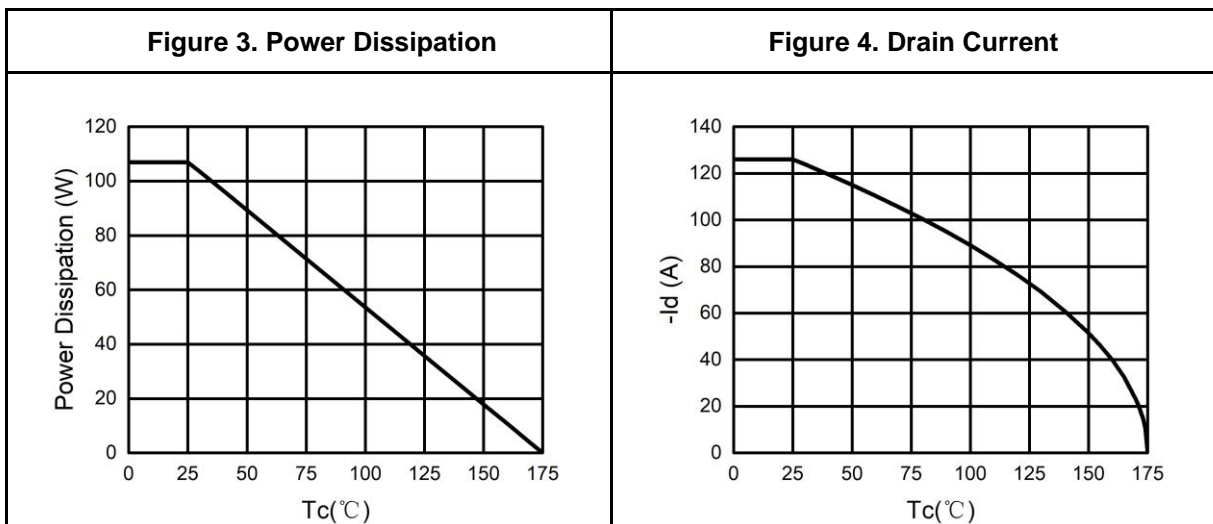
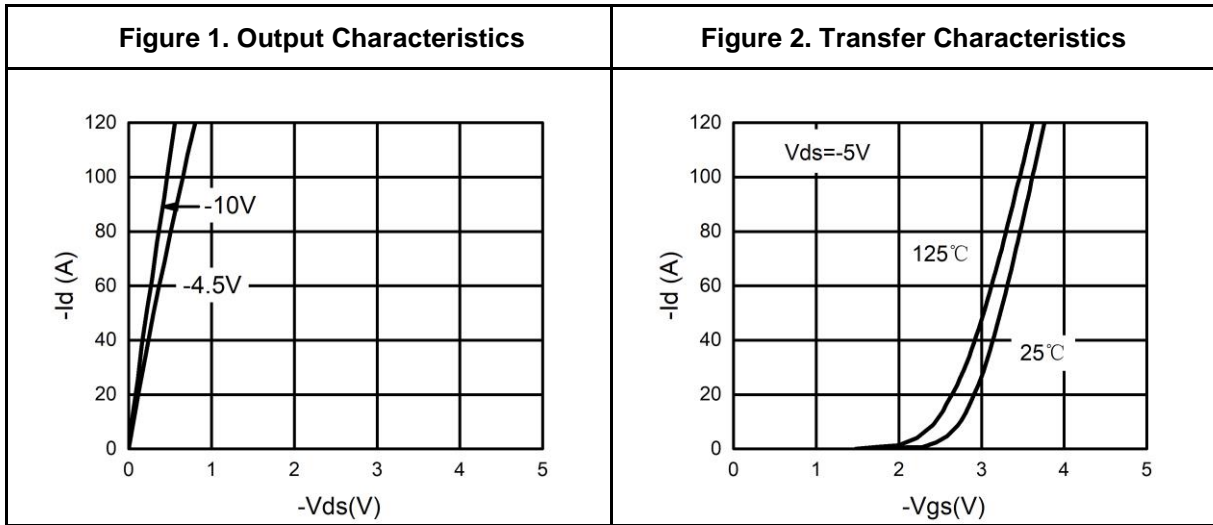
MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -30V, 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	-1.7	-2.5	V
Forward Transconductance	G _{FS}	V _{DS} = -5V, I _D = -20A		60		S
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -20A	-	3.1	3.9	mΩ
		V _{GS} = -4.5V, I _D = -20A		4.6	6.0	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz	-	7000	-	pF
Output Capacitance	C _{oss}		-	820	-	
Reverse Transfer Capacitance	C _{rss}		-	540	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DS} = -15V, R _L = 0.75Ω, R _G = 3Ω, V _G = -10V	-	14	-	ns
Turn-on rise time	t _r		-	13	-	
Turn-off delay time	t _{d(off)}		-	65	-	
Turn-off fall time	t _f		-	37	-	
Total Gate Charge	Q _g	V _{DS} = -15V, I _D = -20A, V _{GS} = -10V	-	130	-	nC
Gate-Source Charge	Q _{gs}		-	12	-	
Gate-Drain Charge	Q _{gd}		-	31	-	
Source-Drain Diode characteristics						
Diode Forward voltage ^(a)	V _{SD}	T _J = 25°C, V _{GS} = 0V, I _S = -20A	-	-	-1.2	V
Diode Forward current	I _S	T _C = 25°C	-	-	-126	A
Body Diode Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -20A, di/dt = 100A/us		30		ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _J = 25°C, I _F = -20A, di/dt = 100A/us		40		nc

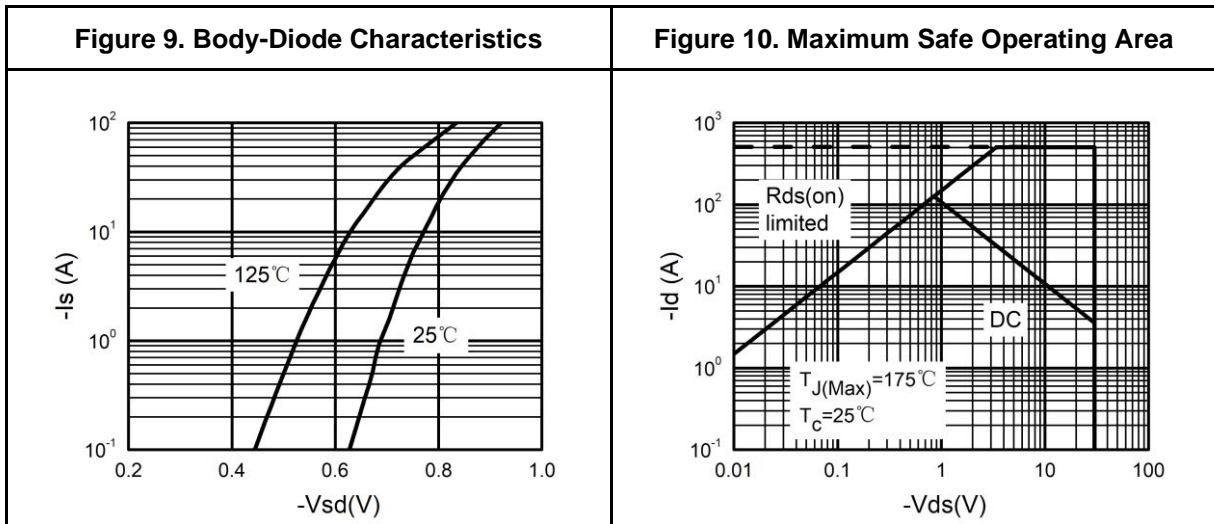
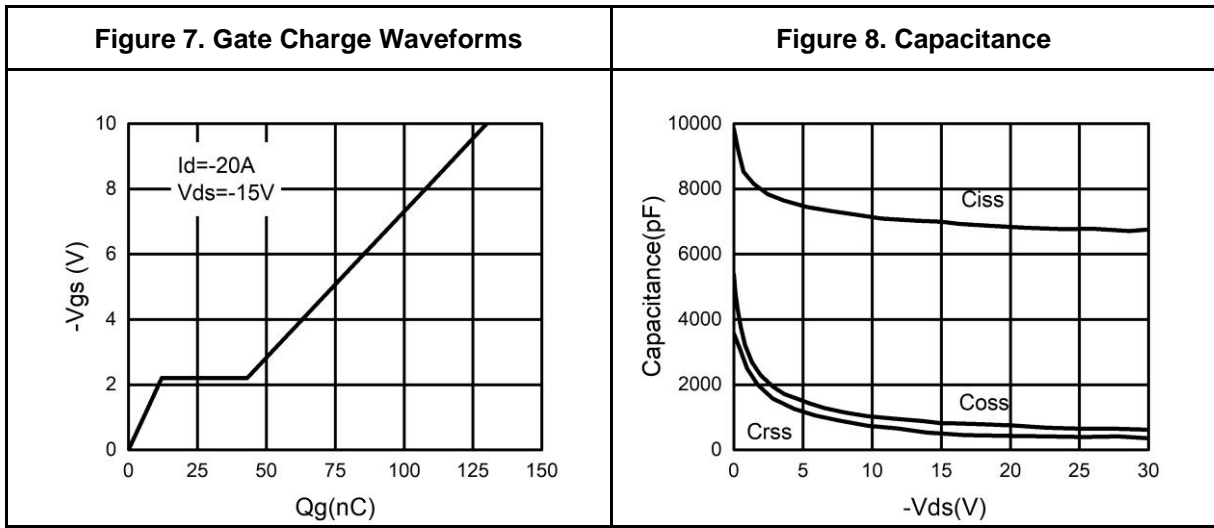
Notes:

- a) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- b) EAS condition: T_J = 25°C, V_{DD} = -15V, V_G = -10V, R_G = 25Ω, L = 0.5mH
- c) Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

Typical Electrical And Thermal Characteristics (Curves)

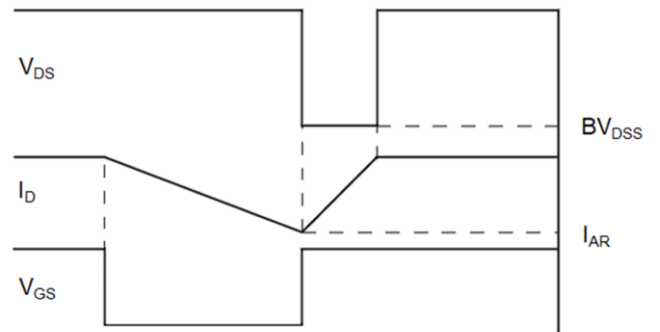
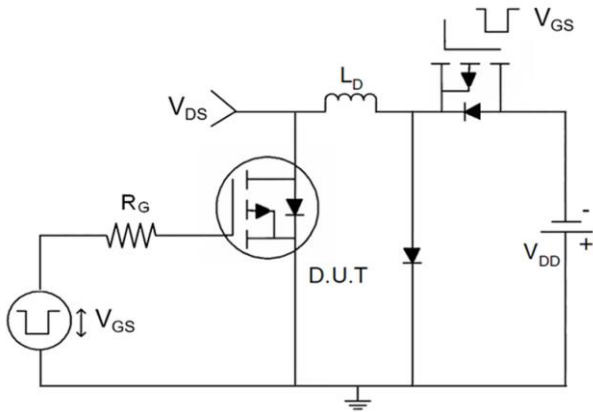


Typical Electrical And Thermal Characteristics (Curves)

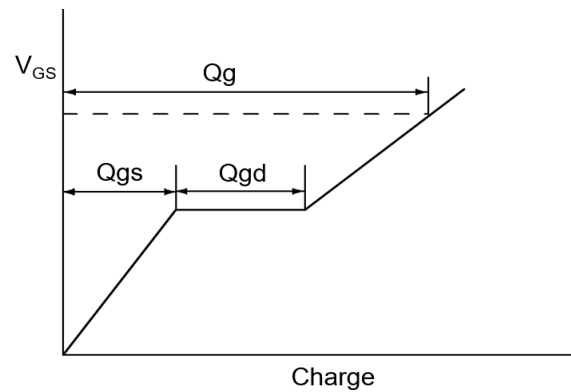
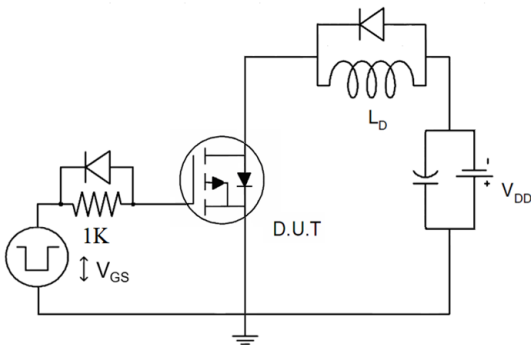


Test Circuit

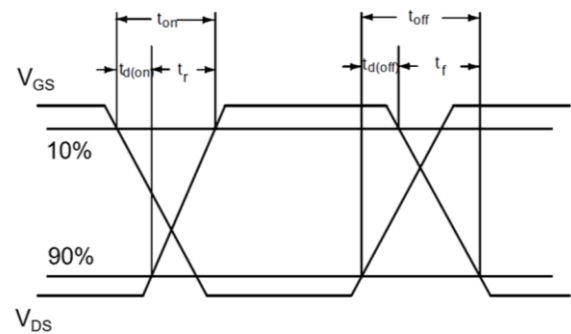
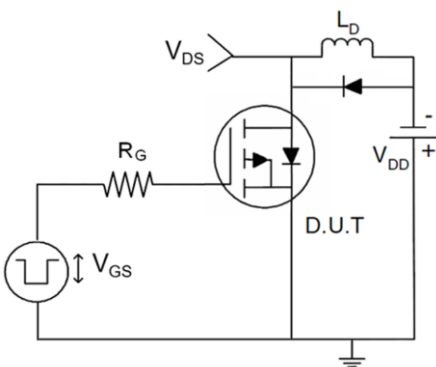
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit

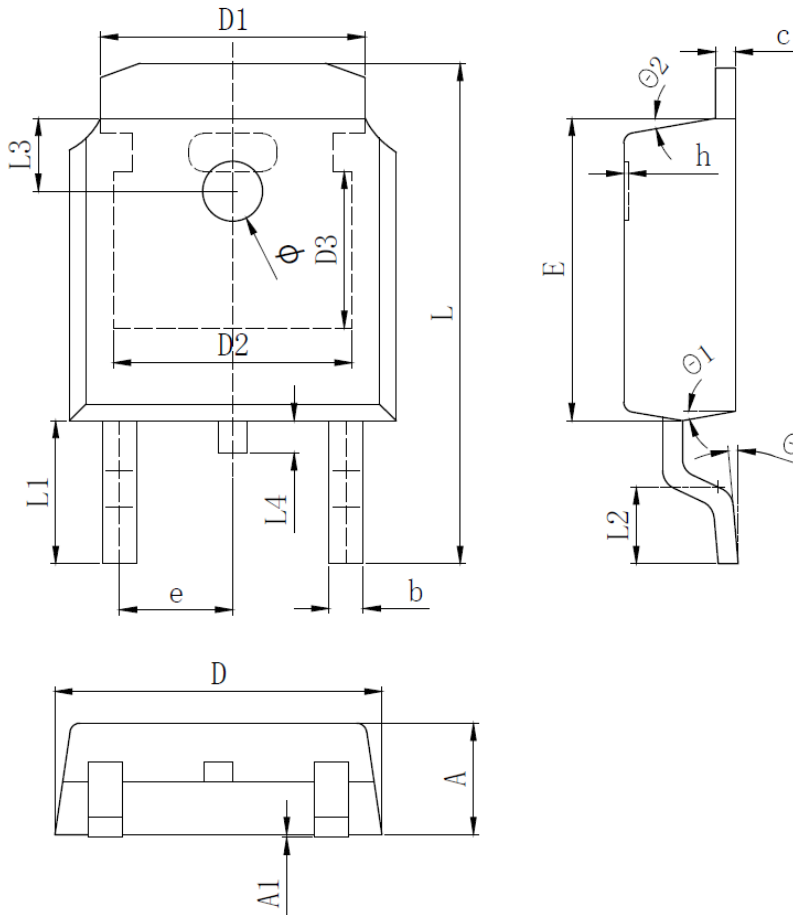


3) Switch Time Test Circuit



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TO-252 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
ϕ	1.100	1.200	1.300
θ	0°		8°
$\theta 1$	9° TYP		
$\theta 2$	9° TYP		