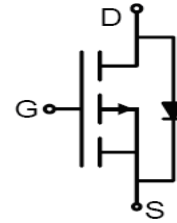


AP85P04G

P-Channel Enhancement Mosfet

Features

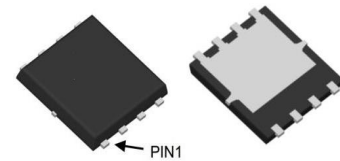
- -40V, -85A
 $R_{DS(ON)} < 5.3m\Omega @ V_{GS} = -10V$ TYP:4.3m Ω
 $R_{DS(ON)} < 7.6m\Omega @ V_{GS} = -4.5V$ TYP:5.9m Ω
- Advanced Trench Technology
- High Power and current handing capability
- Lead free product is acquired



Schematic Diagram

Applications

- Load Switch
- PWM Application
- Power management



PDFN5X6

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
85P04G	AP85P04G	PDFN5X6	13inch	-	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^\circ C$)	I_D	-85	A
Continuous Drain Current ($T_c = 100^\circ C$)	I_D	-60	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-340	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	576	mJ
Drain Power Dissipation	P_D	70	W
Thermal Resistance from Junction to Case ⁽²⁾	$R_{\theta JC}$	2.15	$^\circ C/W$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{STG}	-55~ +150	$^\circ C$

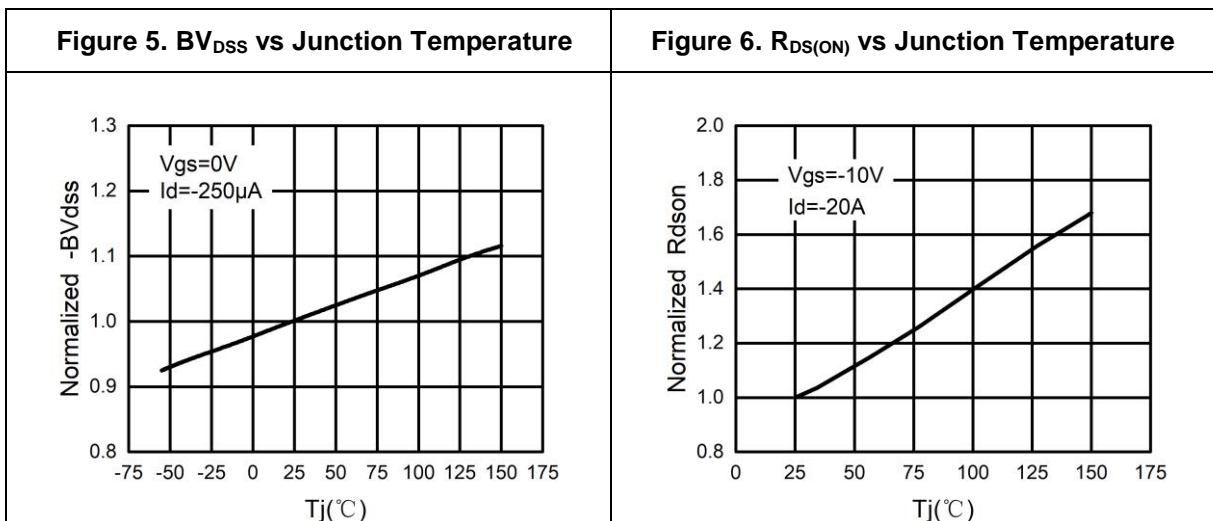
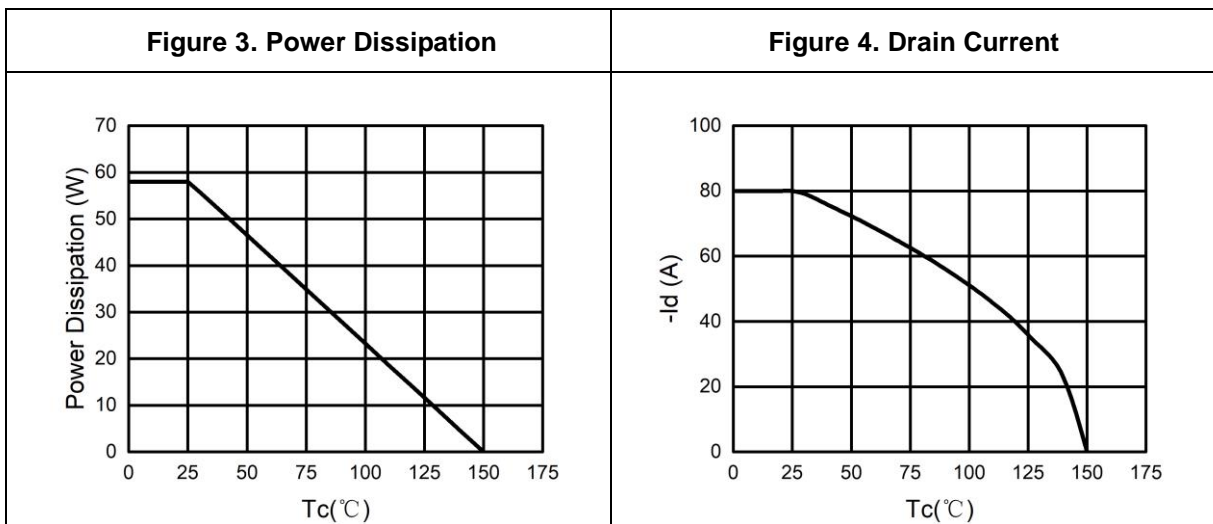
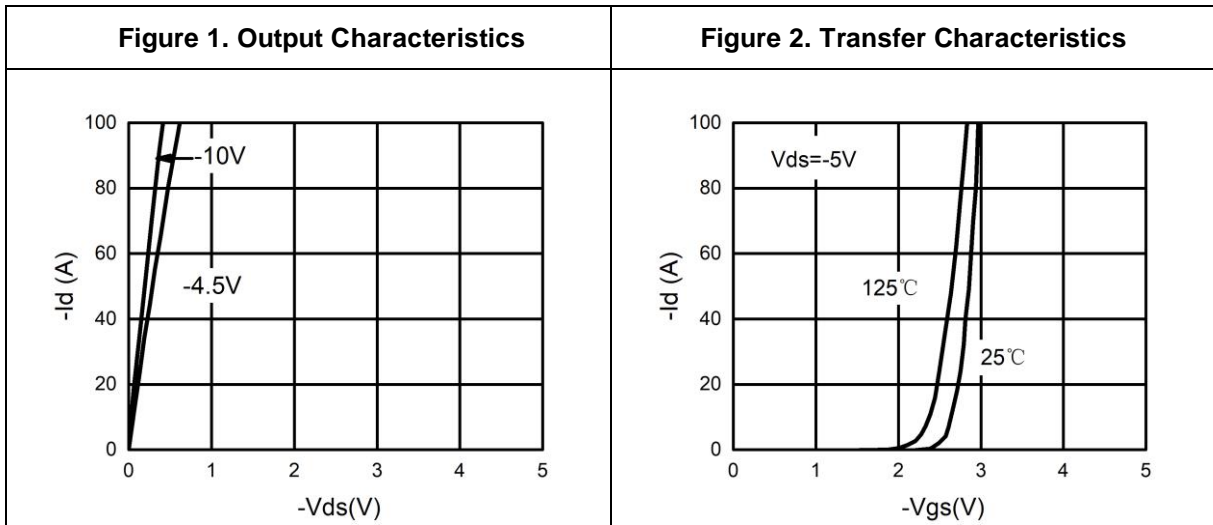
MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -40V, V_{GS} = 0V$	-	-	-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.7	-2.5	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -20A$	-	4.3	5.3	m Ω
		$V_{GS} = -4.5V, I_D = -20A$		5.9	7.6	m Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -20V, V_{GS} = 0V, f = 1.0MHz$	-	6638	-	pF
Output Capacitance	C_{oss}		-	545	-	
Reverse Transfer Capacitance	C_{rss}		-	345	-	
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$		2.2		Ω
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DS} = -20V, I_D = -20A,$ $R_G = 3\Omega, V_G = -10V$	-	16	-	ns
Turn-on rise time	t_r		-	17	-	
Turn-off delay time	$t_{d(off)}$		-	68	-	
Turn-off fall time	t_f		-	31	-	
Total Gate Charge	Q_g	$V_{DS} = -20V, I_D = -20A,$ $V_{GS} = -10V$	-	118	-	nC
Gate-Source Charge	Q_{gs}		-	13	-	
Gate-Drain Charge	Q_{gd}		-	22	-	
Source-Drain Diode characteristics						
Diode Forward voltage ^(a)	V_{SD}	$T_J = 25^\circ\text{C}, V_{GS} = 0V, I_S = -20A$	-	-	-1.2	V
Diode Forward current	I_S	$T_C = 25^\circ\text{C}$	-	-	-85	A
Body Diode Reverse Recovery Time	t_{rr}	$T_J = 25^\circ\text{C}, I_F = -20A, di/dt = 100A/\mu s$		24		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$T_J = 25^\circ\text{C}, I_F = -20A, di/dt = 100A/\mu s$		140		nc

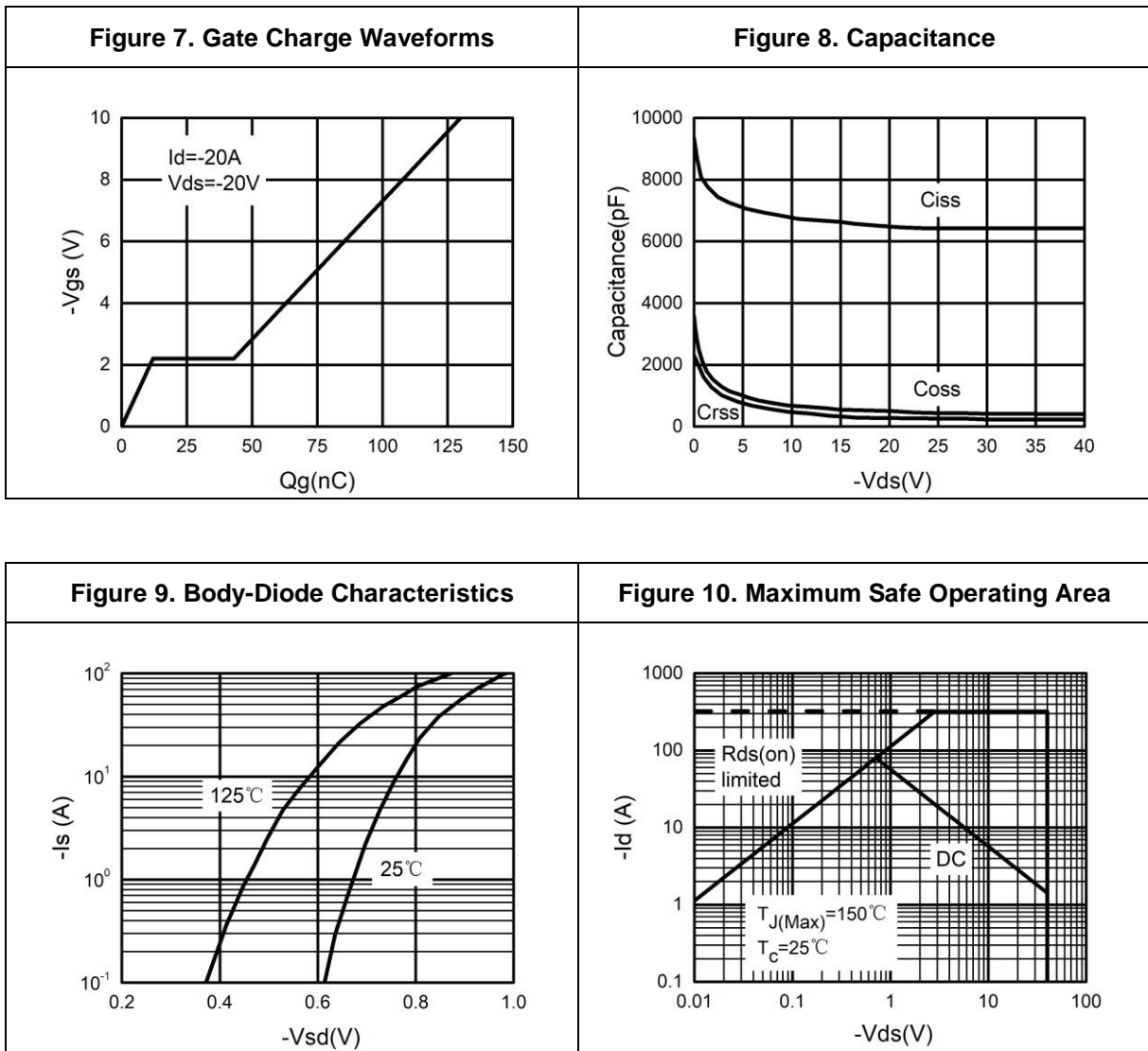
Notes:

- Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = -15V$, $V_G = -10V$, $R_G = 25\Omega$, $L = 0.5mH$
- Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Electrical And Thermal Characteristics (Curves)

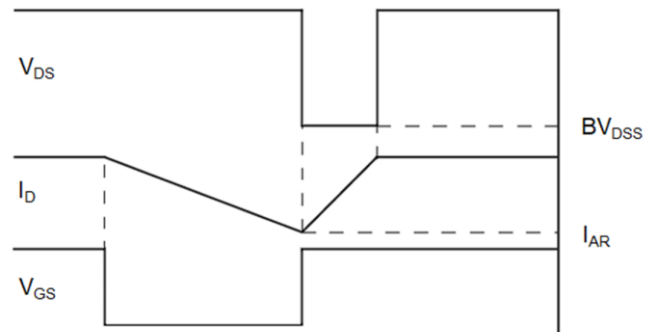
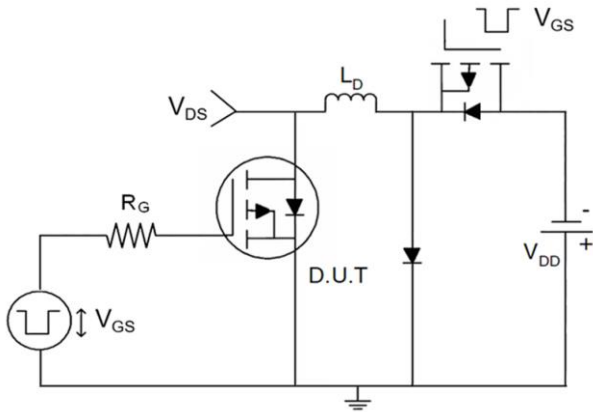


Typical Electrical And Thermal Characteristics (Curves)

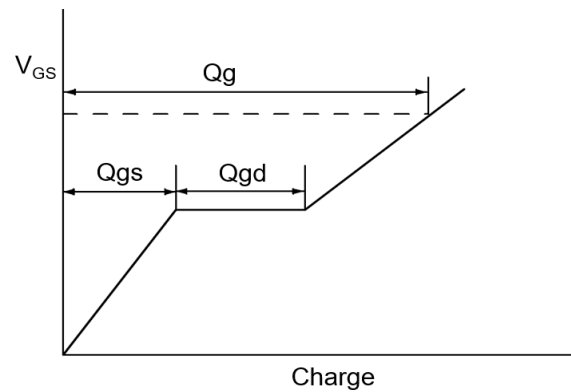
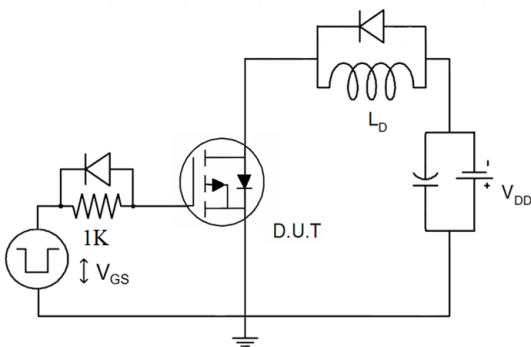


Test Circuit

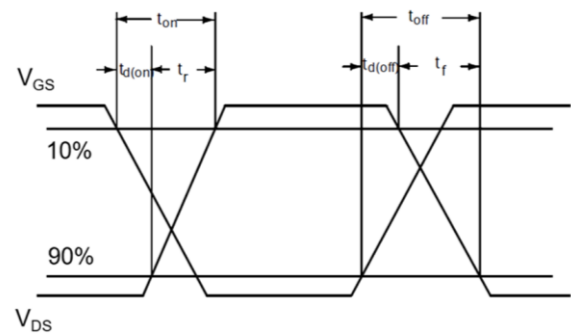
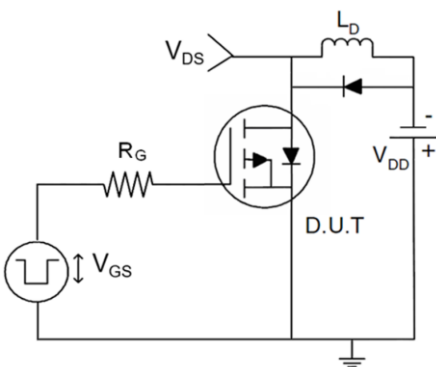
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit

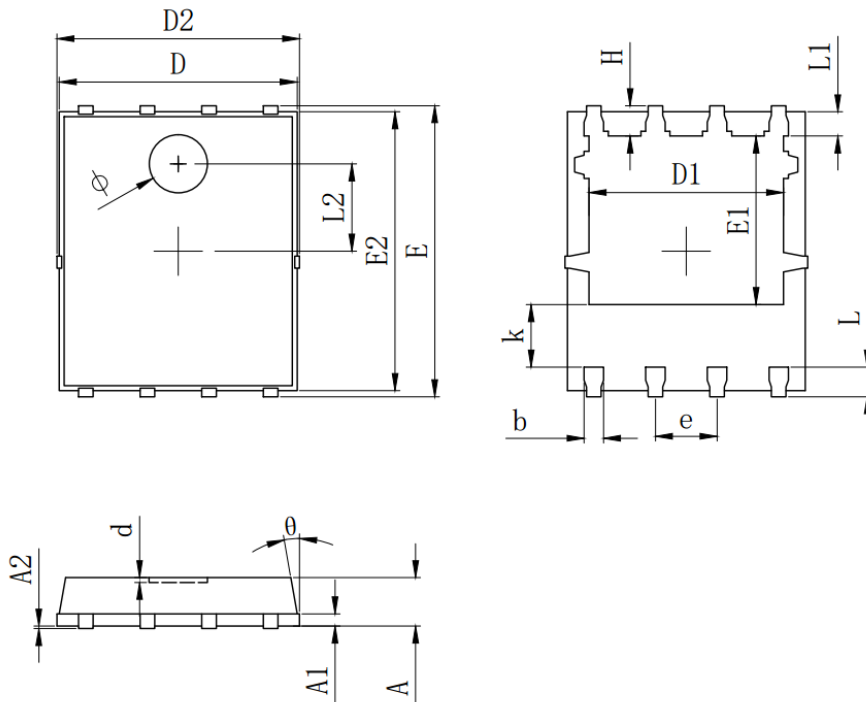


3) Switch Time Test Circuit



AP85P04G
P-Channel Enhancement Mosfet

PDFN5X6 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0°0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100