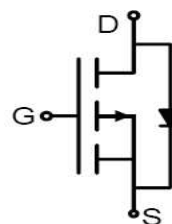


Features

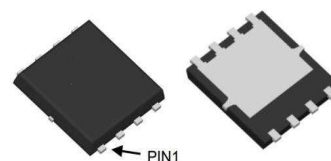
- -40V, -85A
 $R_{DS(ON)} < 5.3m\Omega @ V_{GS} = -10V$ TYP:4.3m Ω
 $R_{DS(ON)} < 7.6m\Omega @ V_{GS} = -4.5V$ TYP:5.9m Ω
- Advanced Trench Technology
- High Power and current handling capability
- Lead free product is acquired



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	-85	A
Continuous Drain Current ($T_c = 100^\circ\text{C}$)	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	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

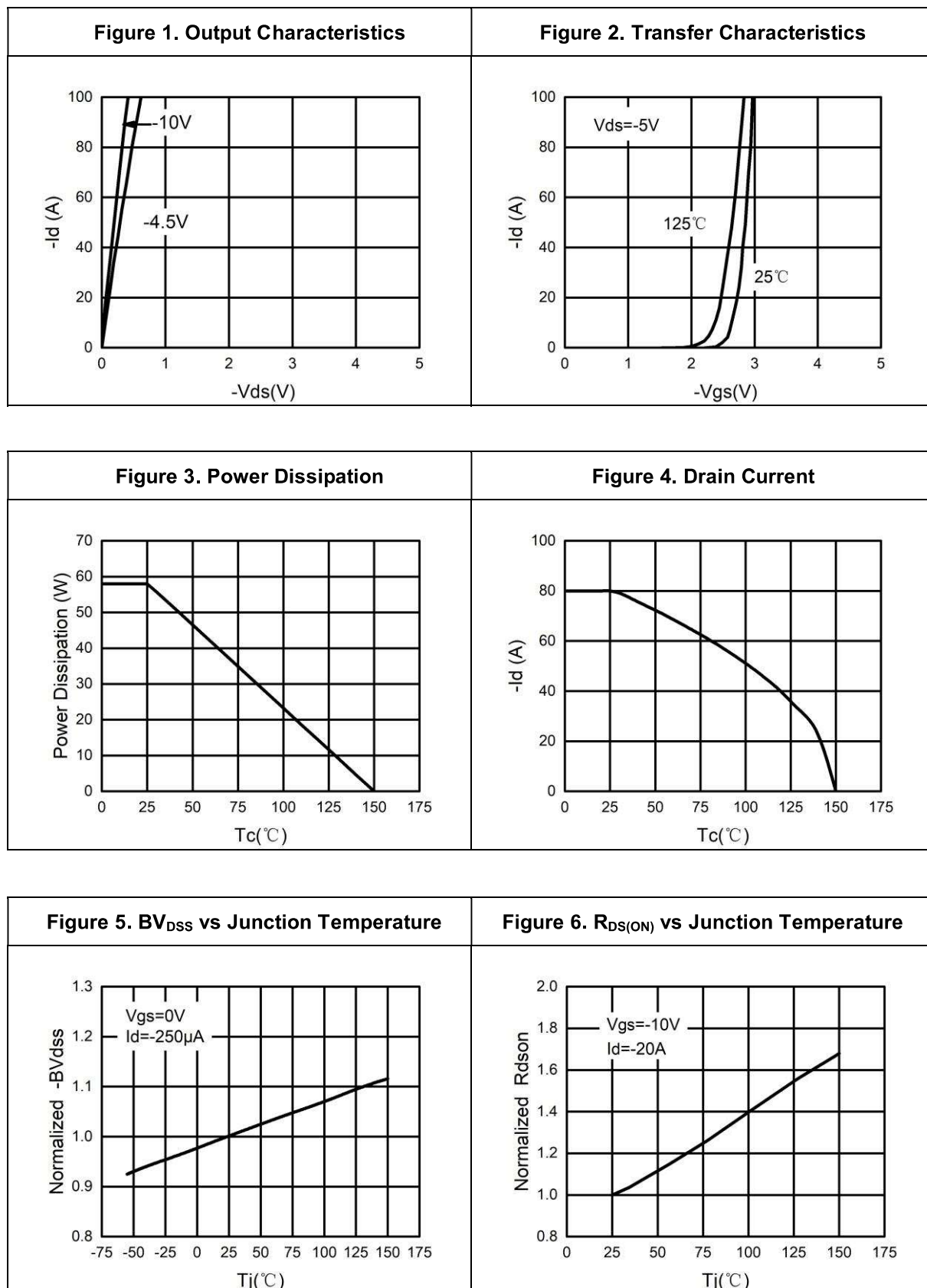
MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =-250μA	-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} =± 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
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =-10V, I _D =-20A	-	4.3	5.3	mΩ
		V _{GS} =-4.5V, I _D =-20A		5.9	7.6	mΩ
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 =3Ω, 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℃, V _{GS} =0V, I _S =-20A	-	-	-1.2	V
Diode Forward current	I _S	T _C =25℃	-	-	-85	A
Body Diode Reverse Recovery Time	t _{rr}	T _J =25℃, IF=-20A, di/dt=100A/us		24		ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _J =25℃, IF=-20A, di/dt=100A/us		140		nc

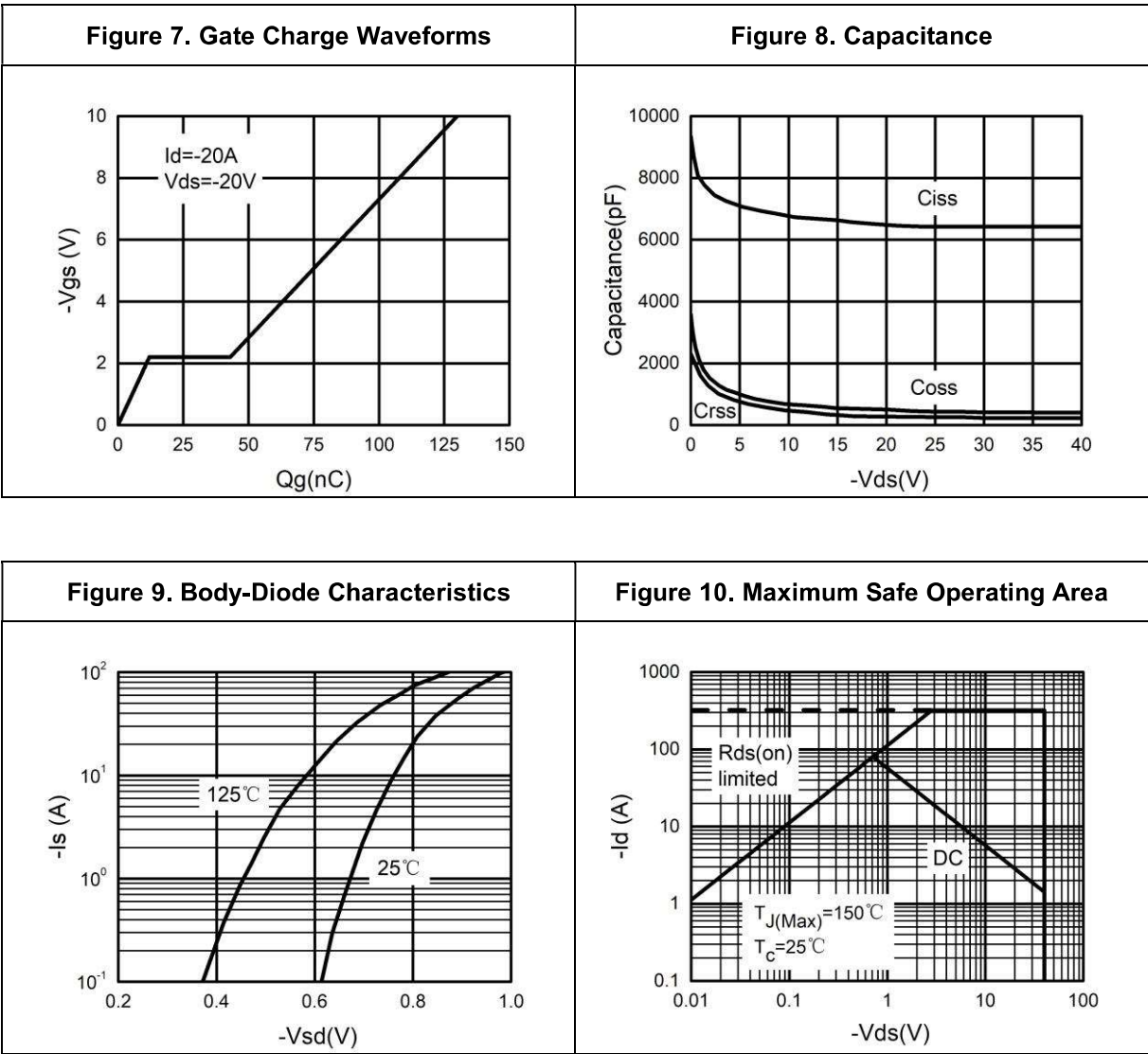
Notes:

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

Typical Electrical And Thermal Characteristics (Curves)

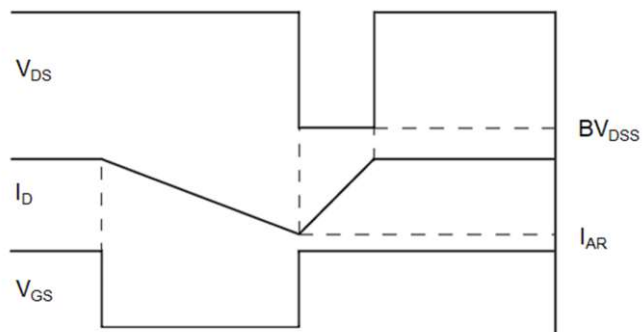
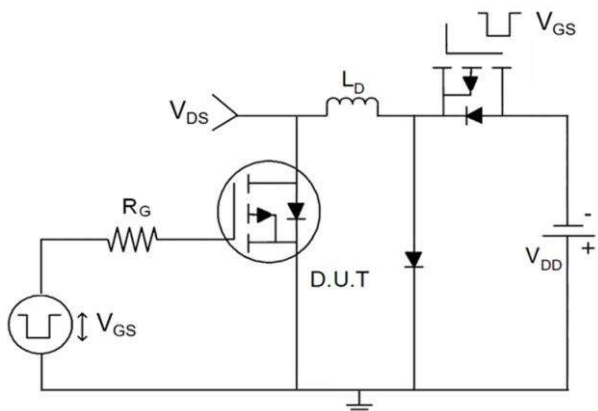


Typical Electrical And Thermal Characteristics (Curves)

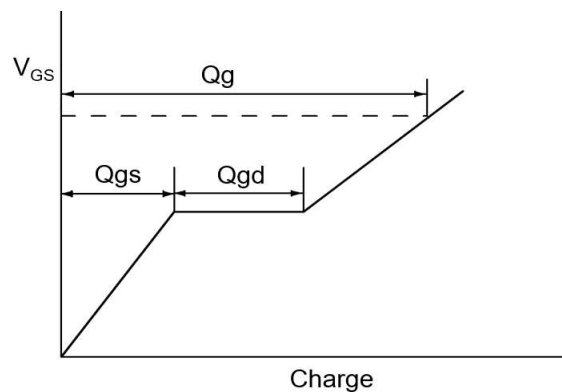
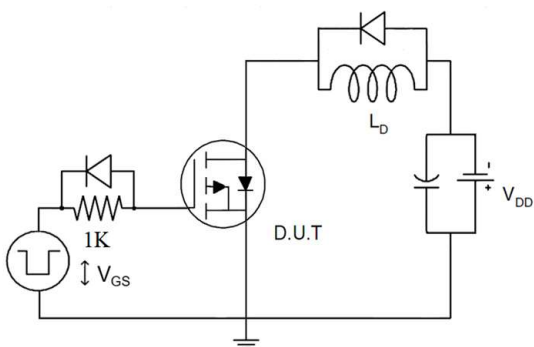


Test Circuit

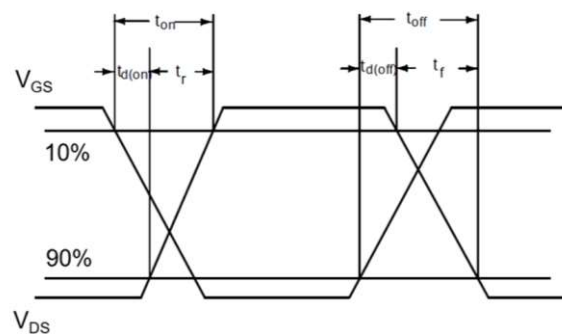
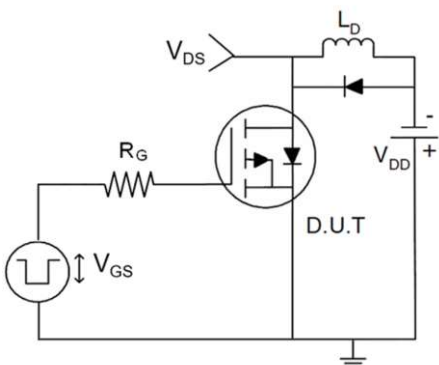
1) E_{AS} Test Circuits



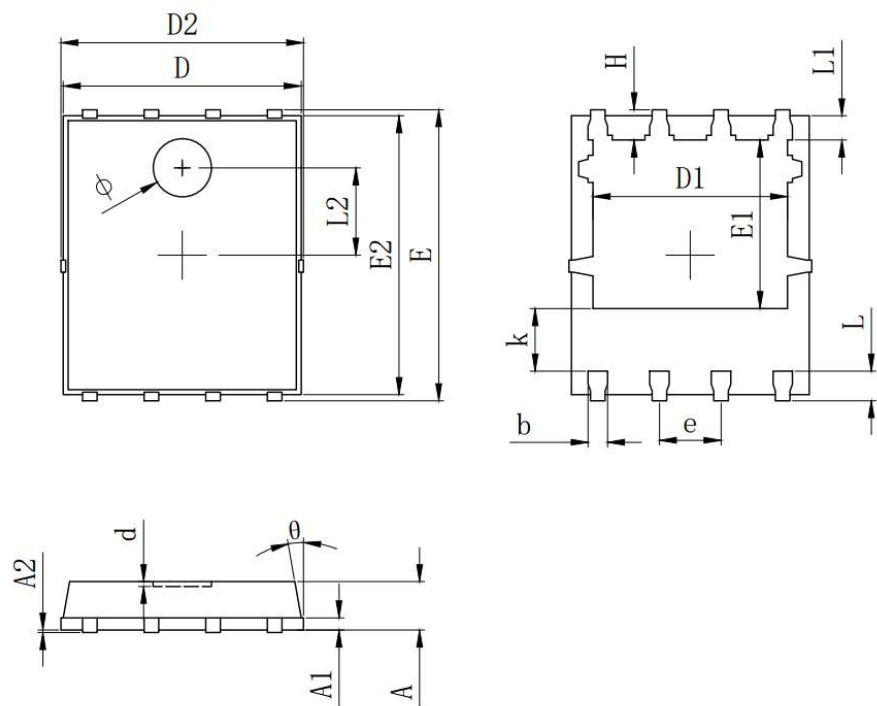
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



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