

AP2060S6

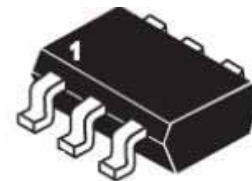
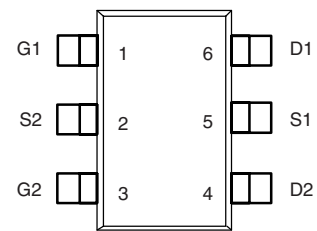
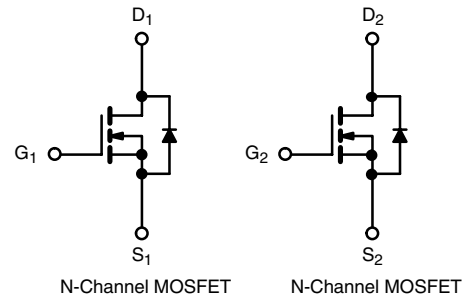
Dual N-Channel Enhancement Mosfet

Feature

- 20V,2.8A
 $R_{DS(ON)} < 55m\Omega @ V_{GS}=4.5V$ TYP=45 m Ω
 $R_{DS(ON)} < 80m\Omega @ V_{GS}=2.5V$ TYP=62 m Ω
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- Halogen-free
- Battery protection
- Load switch
- Power management



SOT23-6

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
D2060	AP2060S6	SOT23-6		-	3000

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±10	V
Continuous Drain Current (T _a =25°C)	I _D	2.8	A
Continuous Drain Current (T _a =70°C)	I _D	2.2	A
Pulsed Drain Current	I _{DM}	11	A
Power Dissipation	P _D	0.83	W
Thermal Resistance from Junction to Ambient	R _{θJA}	150	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

MOSFET ELECTRICAL CHARACTERISTICS(T_J=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	20	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =20V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±10V, V _{DS} = 0V	-	-	±2000	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.3	0.7	1.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =4.5V, I _D =2.8A	-	45	55	mΩ
		V _{GS} =2.5V, I _D =2A	-	62	80	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f =1MHz	-	184	-	pF
Output Capacitance	C _{oss}		-	38	-	
Reverse Transfer Capacitance	C _{rss}		-	28	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =10V, I _D =2.8A, V _{GS} =4.5V, R _G =10Ω	-	2.3	-	ns
Turn-on rise time	t _r		-	3.1	-	
Turn-off delay time	t _{d(off)}		-	9.2	-	
Turn-off fall time	t _f		-	2.5	-	
Total Gate Charge	Q _g	V _{DS} =10V, I _D =2.8A, V _{GS} =4.5V	-	2.7	-	nC
Gate-Source Charge	Q _{gs}		-	0.4	-	
Gate-Drain Charge	Q _{gd}		-	0.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =2.8A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	2.8	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width≤300μs, duty cycle≤2%
3. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit

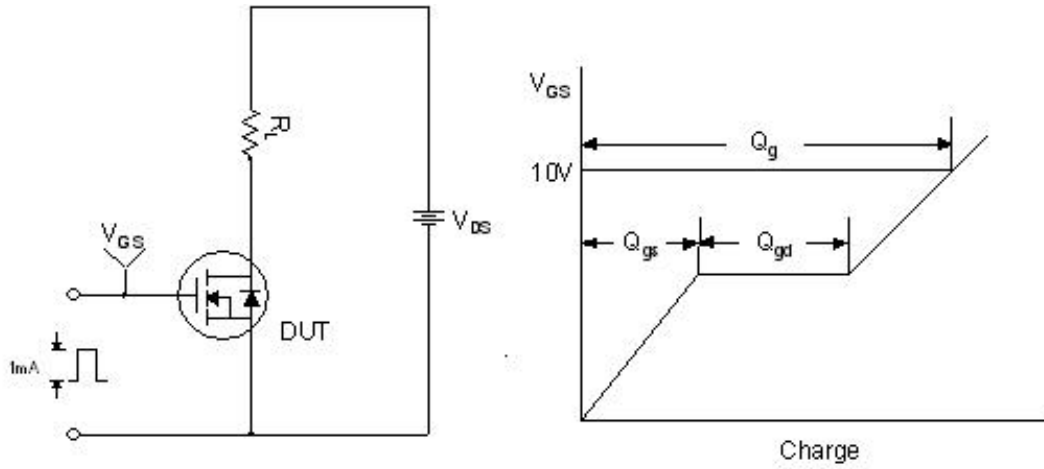


Figure 1. Gate Charge Test Circuit & Waveform

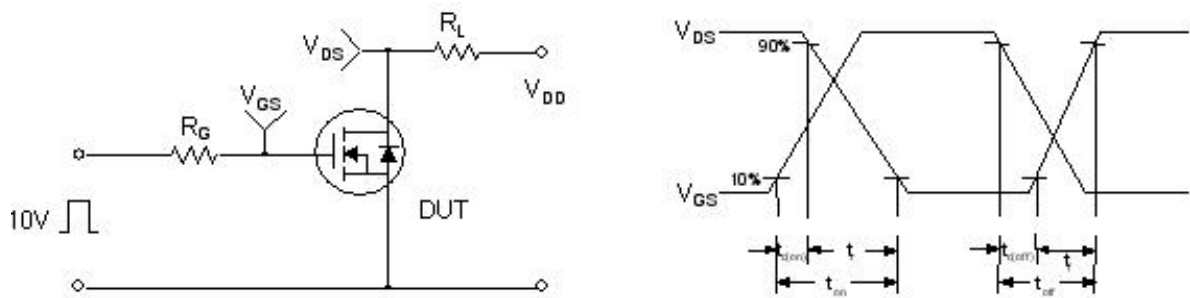


Figure 2. Resistive Switching Test Circuit & Waveforms

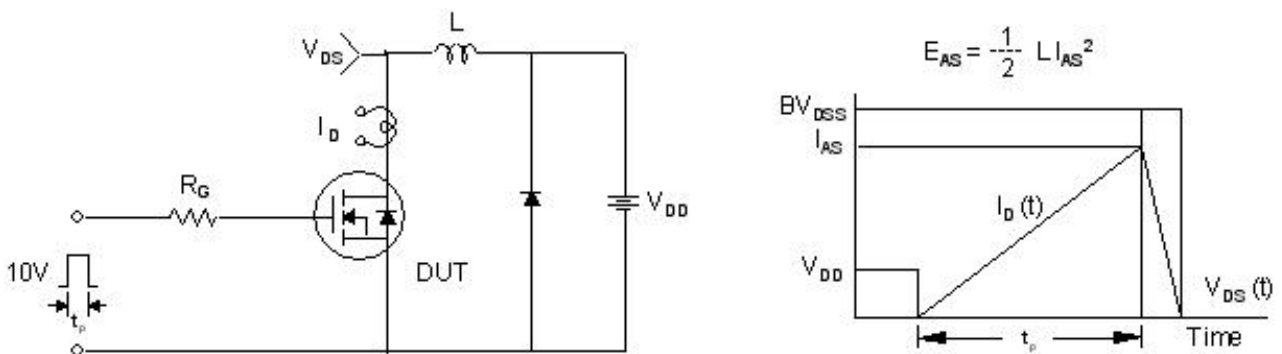


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure 1: Output Characteristics

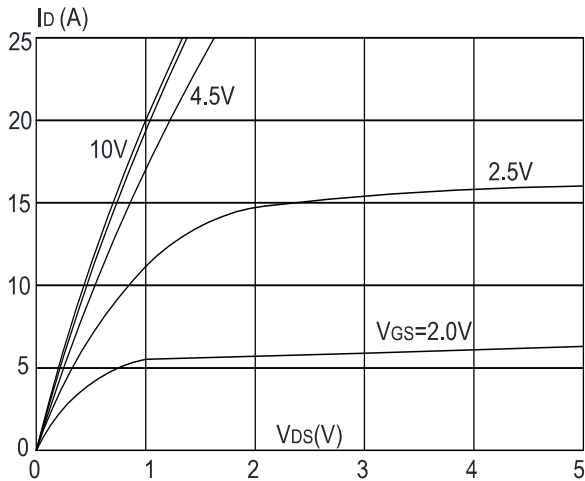


Figure 2: Typical Transfer Characteristics

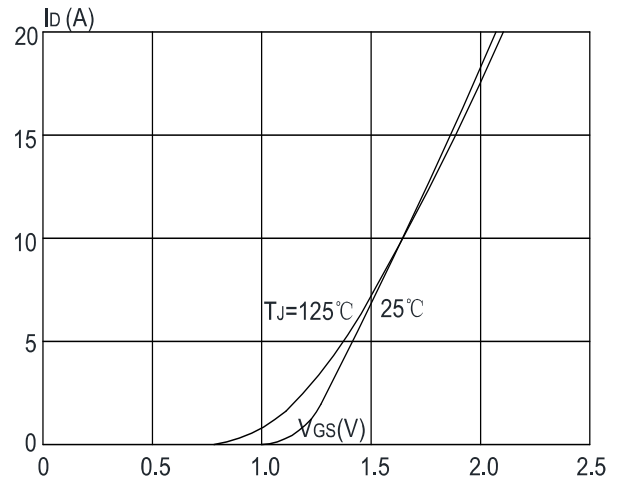


Figure 3: On-resistance vs. Drain Current

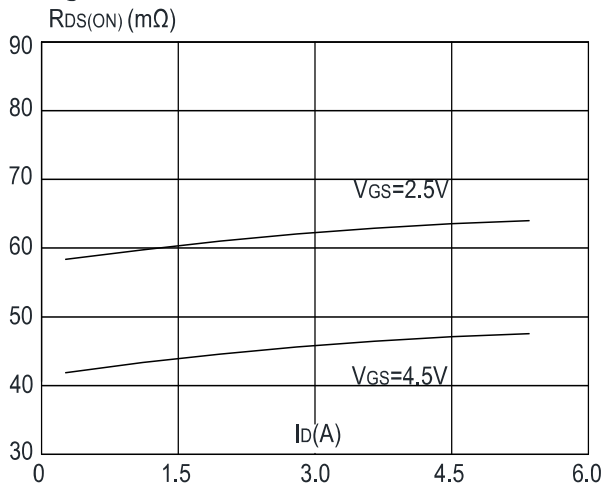


Figure 4: Body Diode Characteristics

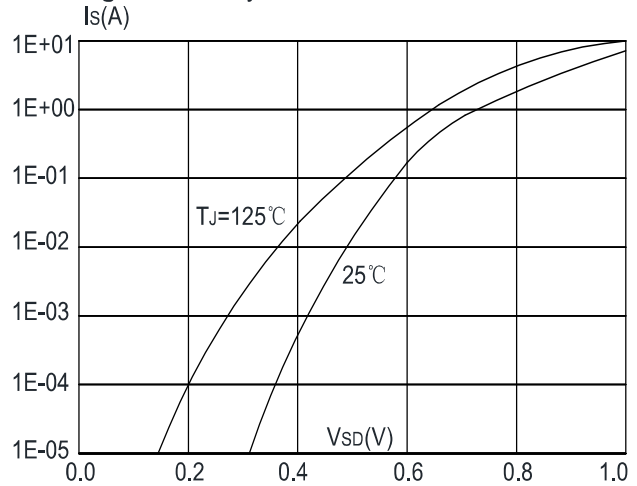


Figure 5: Gate Charge Characteristics

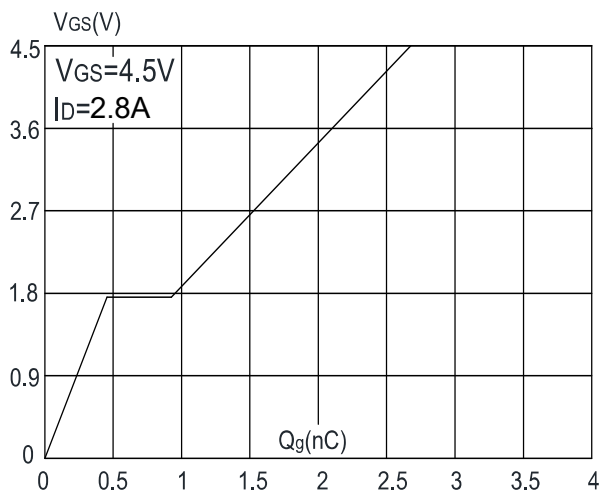
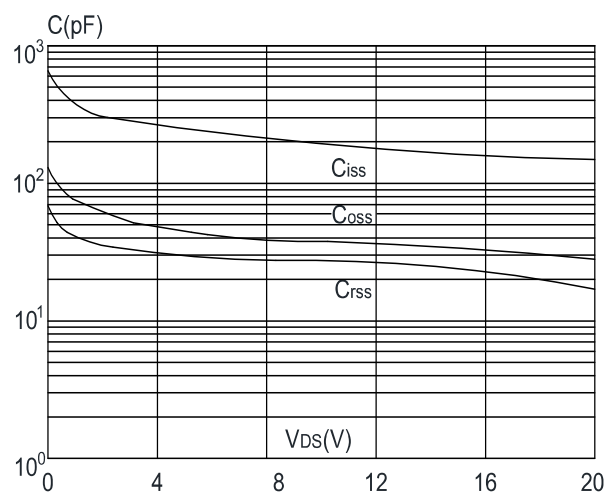


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

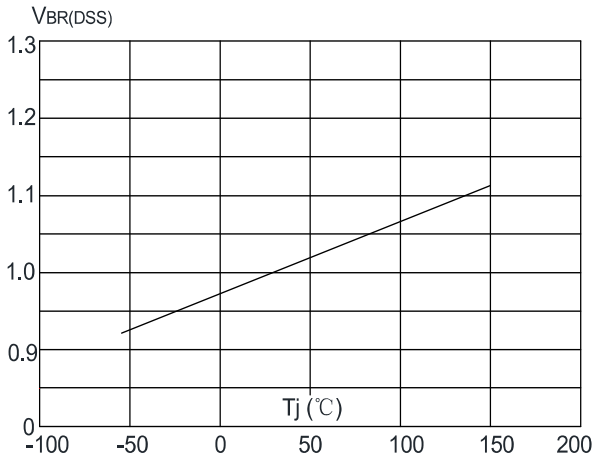


Figure 8: Normalized on Resistance vs. Junction Temperature

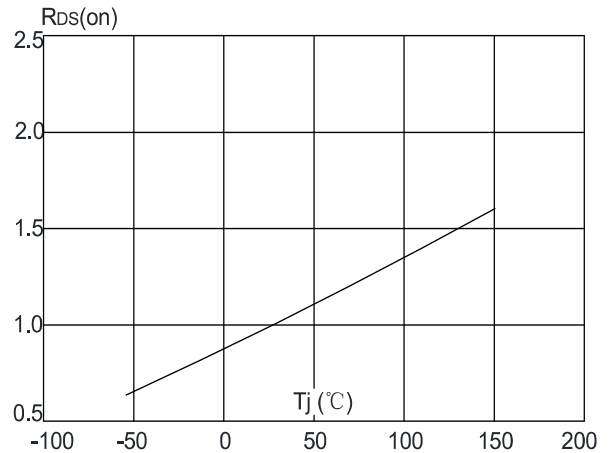


Figure 9: Maximum Safe Operating Area

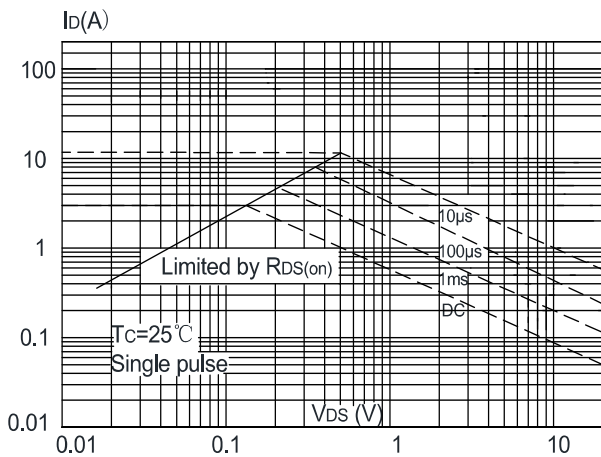


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

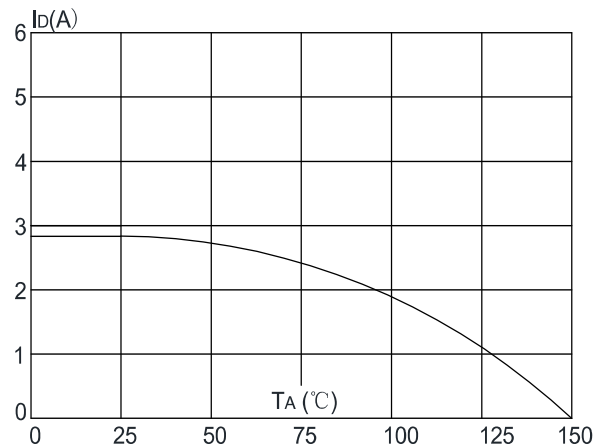
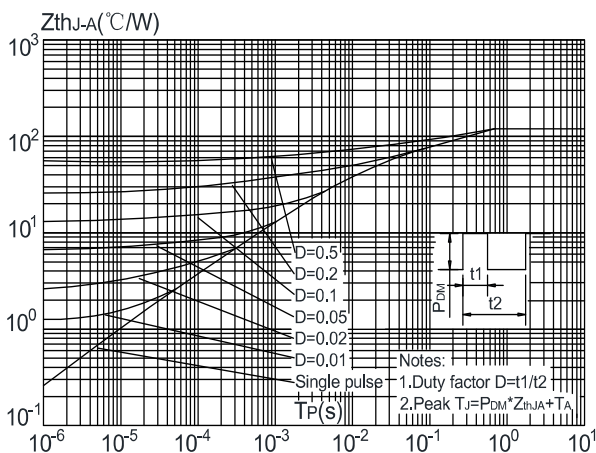
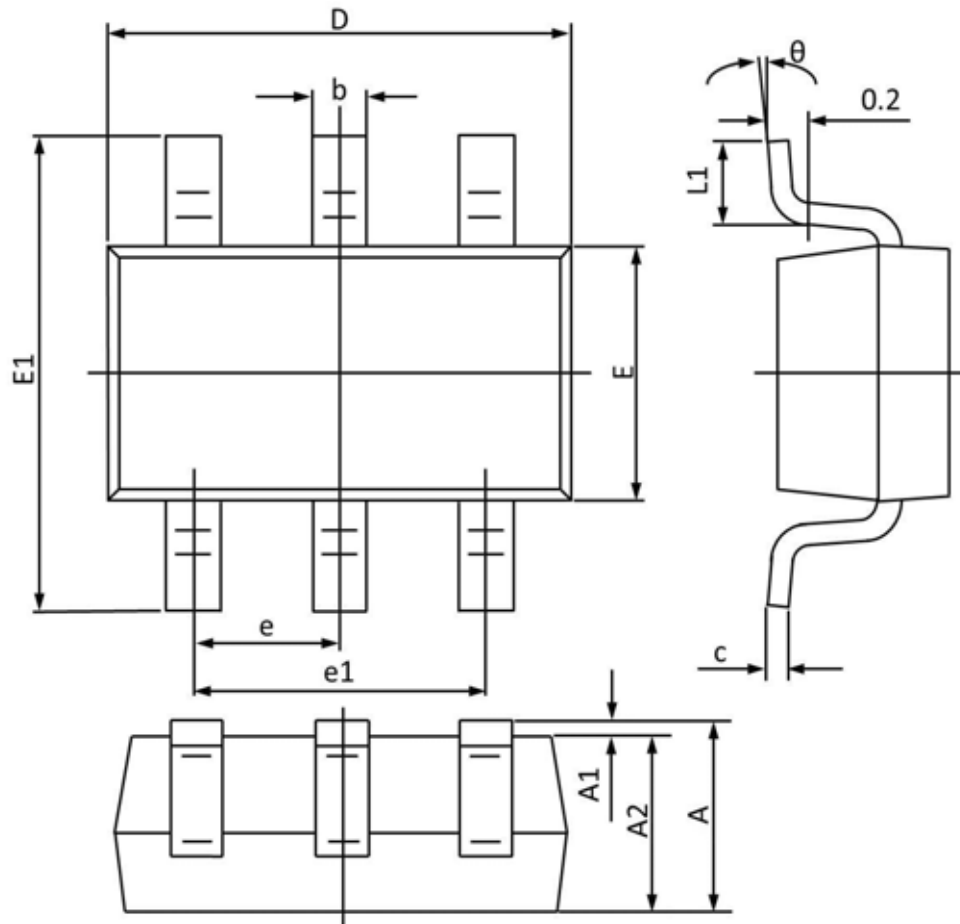


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT23-6 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.450	-	0.057	-
A1	0.100	0.000	0.004	0.000
A2	1.300	1.050	0.051	0.041
b	0.500	0.300	0.020	0.012
c	0.200	0.100	0.008	0.004
D	3.100	2.700	0.122	0.106
E	1.800	1.400	0.071	0.055
E1	3.000	2.600	0.118	0.102
e	0.95BSC		0.037BSC	
e1	2.000	1.800	0.079	0.071
L1	0.600	0.300	0.024	0.012
θ	10°	0°	10°	0°

Revision History

Revision	Release	Remark
V1.0	2023/06/26	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product, but similar performance is not guaranteed under other working conditions, and cannot be guaranteed when installed with other products or equipment. To achieve the required performance of the product in actual scenarios, the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings, operating conditions, or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability. Customers using or selling these products for use in medical, life-saving, or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements, the information described or contained herein may be changed without prior notice.