30V/26mΩ@10V N-Channel MOSFET

Features

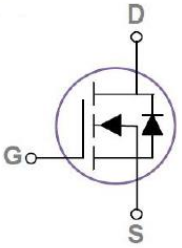
- V_{DS}(max)=30V
- I_D(max)=5.8A
- $R_{DS(ON)}$ =26mΩ(max)@V_{GS} = 10V
- $R_{DS(ON)}$ =32mΩ(max)@V_{GS} = 4.5V
- Improved dv/dt capability
- Green Device Available
- Fast switching

Applications

- Power Management
- PWM Application
- Load Switch

SOT23 Pin Configuration

MARKING：N3A6



Maximum Ratings (Tc = 25℃, Unless Otherwise Noted)

Parameters	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current - Continuous(TC=25℃)	I_D	5.8	A
Drain Current - Continuous(TC=100℃)		3.8	A
Drain Current - Pulsed	I_{DM}[1]	23.2	A
Power Dissipation(TC=25℃)	P_D	1.36	W
Power Dissipation - Derate above 25℃		0.011	W/℃
Storage Temperature Range	T_{STG}	-55~ 150	℃
Operating Junction Temperature Range	Tj	-55~ 150	℃

Thermal Characteristics

Parameter	Symbol	Max.	Typ.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	92	℃/W

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Electrical Characteristics(Tj = 25℃, Unless Otherwise Noted)

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain to Source Breakdown Volage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30	---	---	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V, T_J=25℃	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	---	---	±100	nA

On Characteristics

Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.2A	---	19	26	mΩ
		V_{GS}=4.5V, I_D=3A	---	23	32	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	0.9	1.4	V

Dynamic And Switching Characteristics

Total Gate Charge[3]	Q_g	V_{DS}=15V, V_{GS}=4.5V, I_D=4A	---	7.5	---	nC
Gate-Source Charge[3]	Q_{gs}		---	2	---	
Gate-Drain Charge[3]	Q_{gd}		---	2	---	
Turn-on Delay Time[3]	$T_{d(on)}$	V_{DS}=15V, I_D=4A V_{GS}=4.5V, R_{GEN}=3Ω	---	10	---	nS
Turn-on Rise Time[3]	T_r		---	27	---	
Turn-off Delay Time[3]	$T_{d(off)}$		---	26	---	
Turn-off Fall Time[3]	T_f		---	33	---	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	702	---	pF
Output Capacitance	C_{oss}		---	66	---	
Reverse Transfer Capacitance	C_{rss}		---	52	---	

Drain-Source Diode Characteristics And Maximum Ratings

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Continuous Source Current	I_S	V_{GS}= 0V, Force Current	---	---	5.8	A
Pulsed Source Current[3]	I_{SM}		---	---	23.2	A
Diode Forward Voltage[3]	V_{SD}	V_{GS}=0V, I_S=5A, T_J=25℃	---	---	1.2	V

Figure1: Output Characteristics

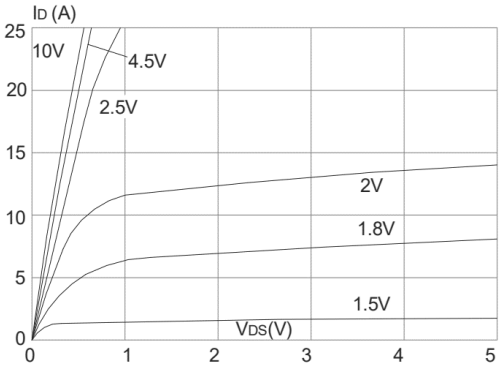


Figure 2: Typical Transfer Characteristics

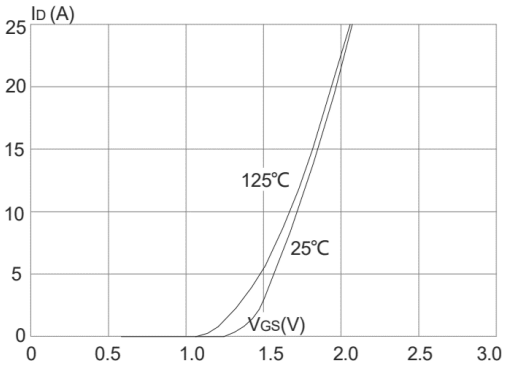


Figure 3: On-resistance vs. Drain Current

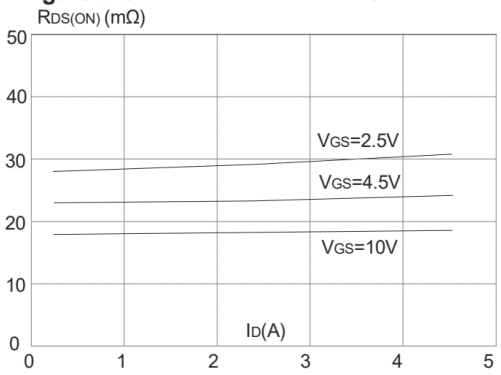


Figure 4: Body Diode Characteristics

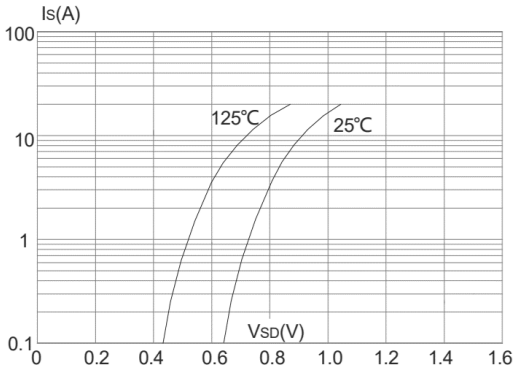


Figure 5: Gate Charge Characteristics

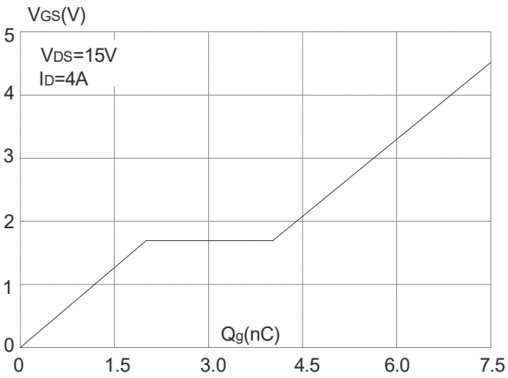


Figure 6: Capacitance Characteristics

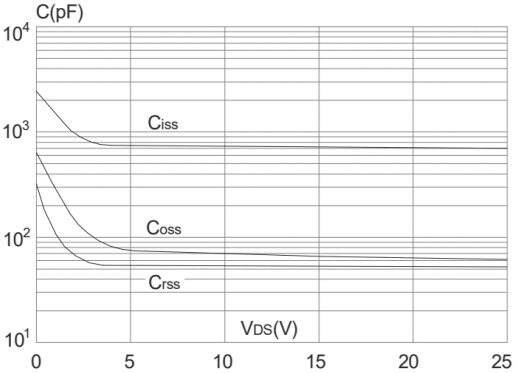


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

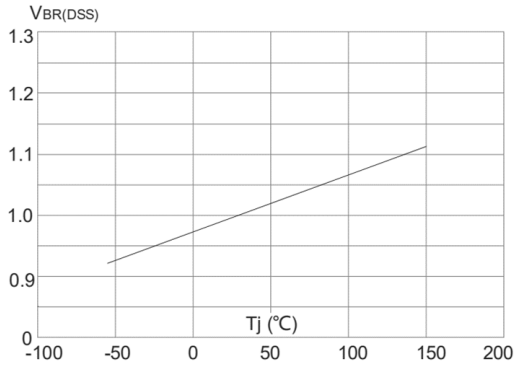


Figure 8: Normalized on Resistance vs. Junction Temperature

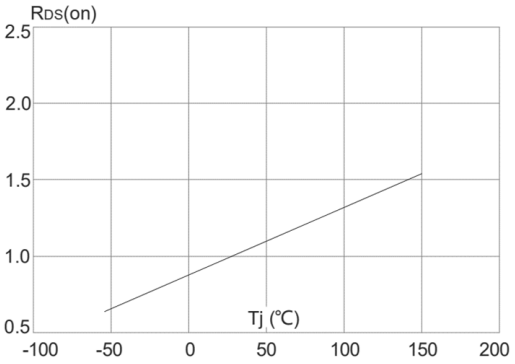


Figure 9: Maximum Safe Operating Area

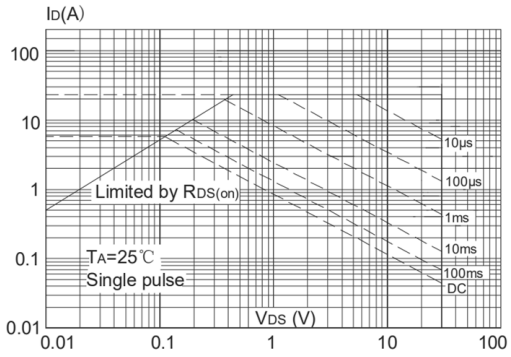


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

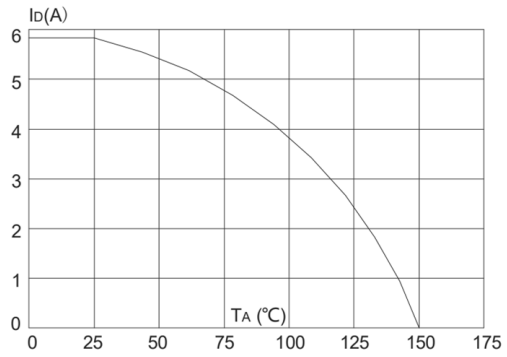
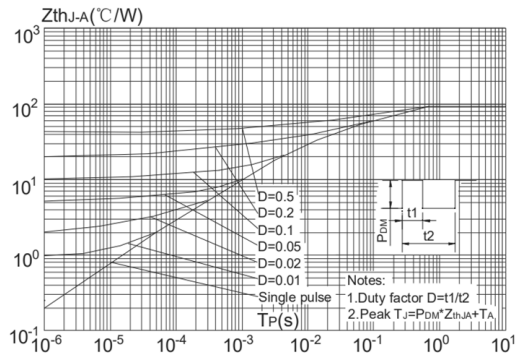
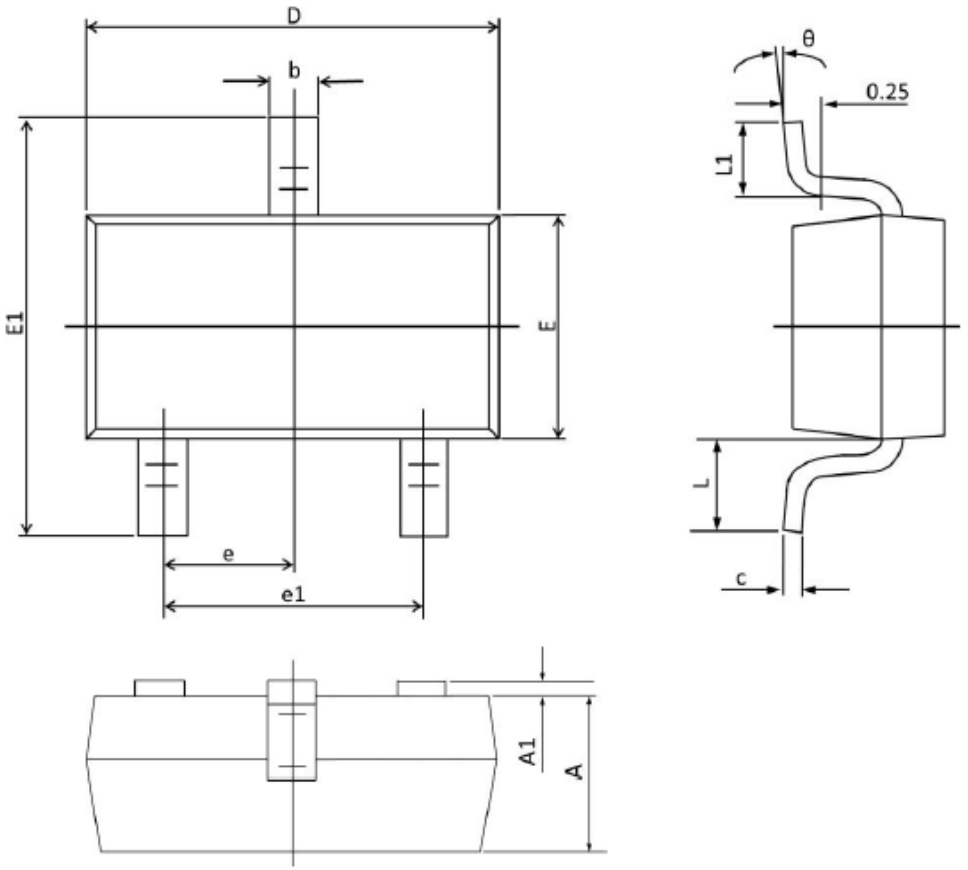


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT23 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°