

30V/26mΩ@10V N-Channel MOSFET

Features

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

Maximum Ratings (Tc = 25°C, 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°C)	I_D	5.8	A
Drain Current - Continuous(TC=100°C)		3.8	A
Drain Current - Pulsed	I_{DM}^1	23.2	A
Power Dissipation(TC=25°C)	P_D	1.36	W
Power Dissipation - Derate above 25°C		0.011	W/°C
Storage Temperature Range	T_{STG}	-55~ 150	°C
Operating Junction Temperature Range	T_J	-55~ 150	°C

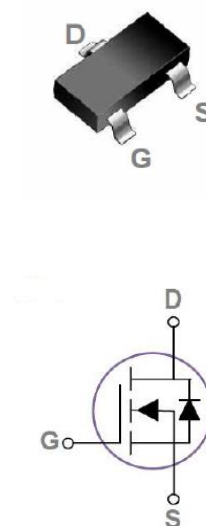
Thermal Characteristics

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

Applications

- Power Management
- PWM Application
- Load Switch

SOT23 Pin Configuration



Note:

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

Electrical Characteristics(T_j = 25 °C, 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

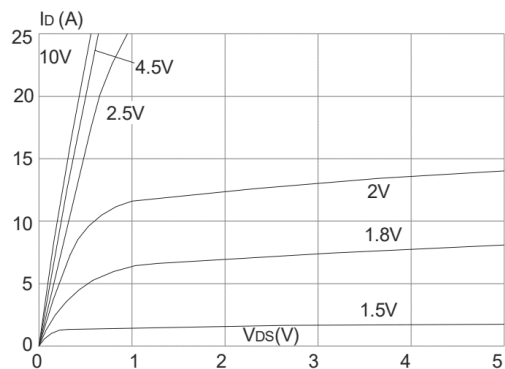


Figure 2: Typical Transfer Characteristics

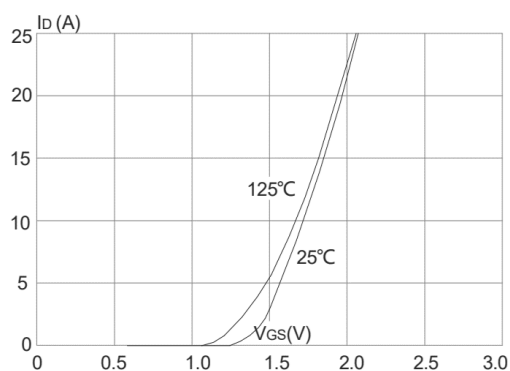


Figure 3: On-resistance vs. Drain Current

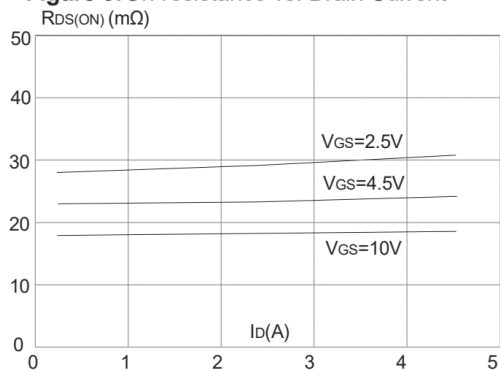


Figure 4: Body Diode Characteristics

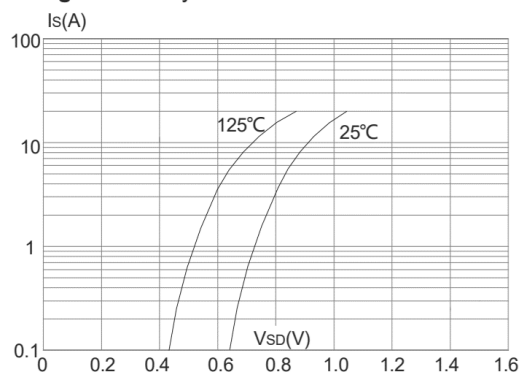


Figure 5: Gate Charge Characteristics

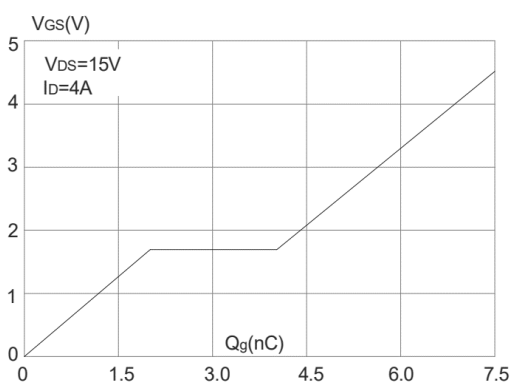


Figure 6: Capacitance Characteristics

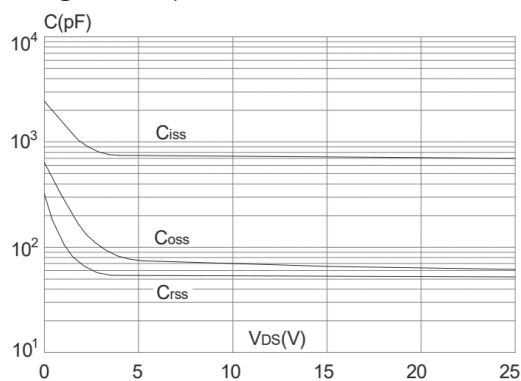


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

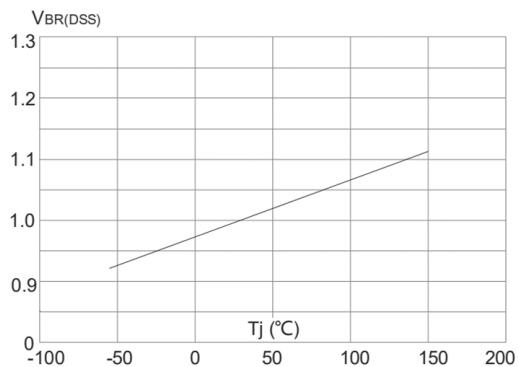


Figure 8: Normalized on Resistance vs. Junction Temperature

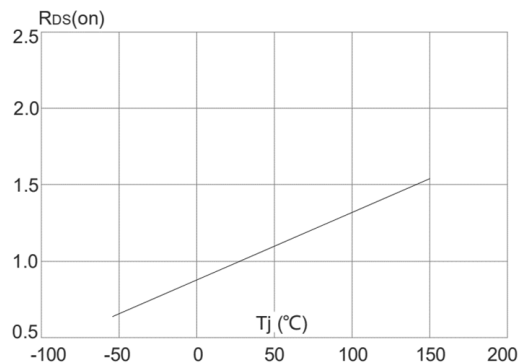


Figure 9: Maximum Safe Operating Area

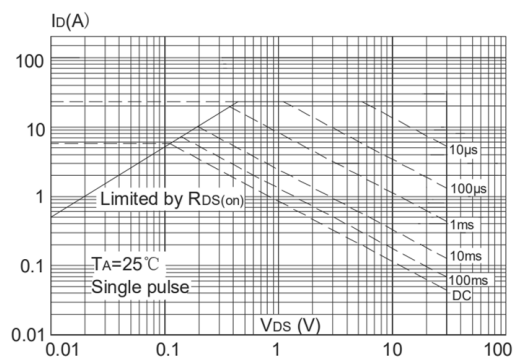


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

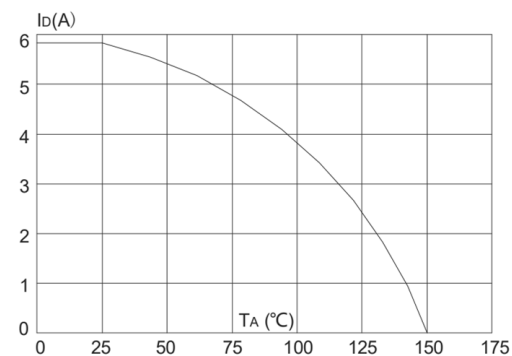
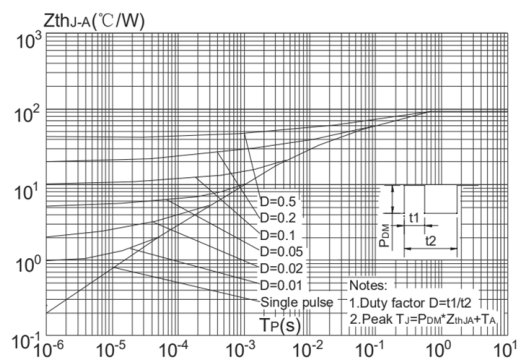
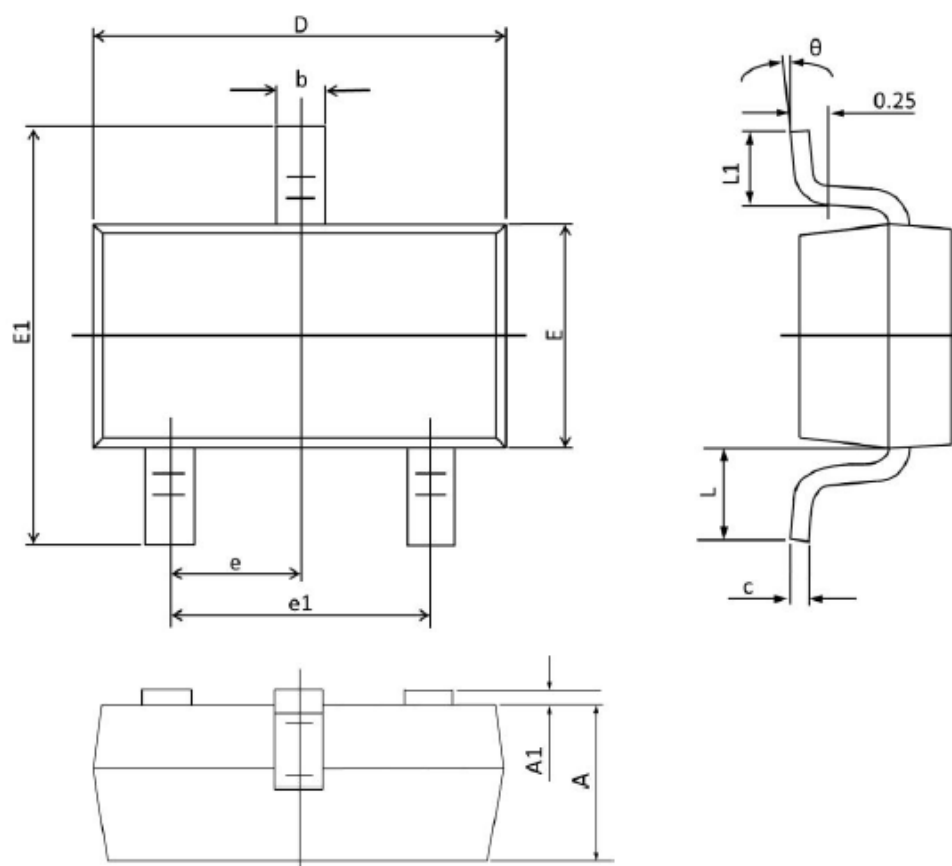


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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°