AT0P6DN030ESH

N-Channel SMD MOSFET ESD Protection

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	450mΩ@-4.5V	0.6A
	680mΩ@-2.5V	

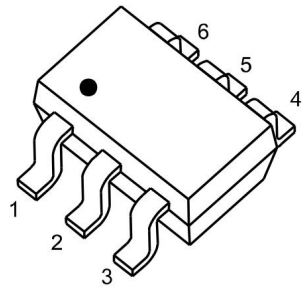
Feature

- Advanced trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge
- ESD protected

Application

- Battery protection
- Load switch
- Uninterruptible power supply

Package



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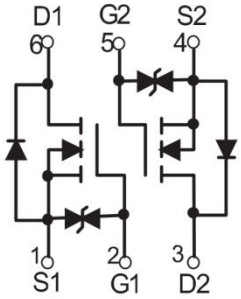
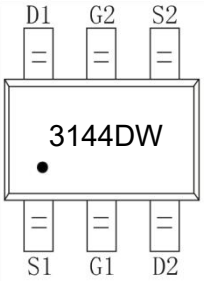
Circuit diagram



Marking



Absolute maximum ratings (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1] (V_{GS}=10V,T_C=25℃)	I_D	0.6	A
Continuous Drain Current[1] (V_{GS}=10V,T_C=100℃)	I_D(100℃)	0.2	A
Pulse Drain Current	I_{DM}	1.8	A
Power Dissipation (T_C=25℃)	P_D	0.3	W
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	416	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30			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			±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.7	0.9	1.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =0.5A		330	450	mΩ
		V_{GS} =2.5V, I_D =0.4A		450	680	
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =15V,V_{GS} =0V,f =1MHz		40		pF
Output Capacitance	C_{oss}			8		
Reverse Transfer Capacitance	C_{rss}			3.5		
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=4.5V,I_D=0.6A		0.45		nC
Gate-Source Charge	Q_{gs}			0.12		
Gate-Drain Charge	Q_{gd}			0.1		
Turn-on delay time	$t_{d(on)}$	V_{DS}=15V,V_{GS}=4.5V, I_D=0.6A R_{GEN}=3Ω		1.5		nS
Turn-on rise time	t_r			15.5		
Turn-off delay time	$t_{d(off)}$			3.8		
Turn-off fall time	t_f			8		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				0.6	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=0.6A			1.2	V

Notes:

1) The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2) Guaranteed by design, not subject to production testing.

Typical Characteristics

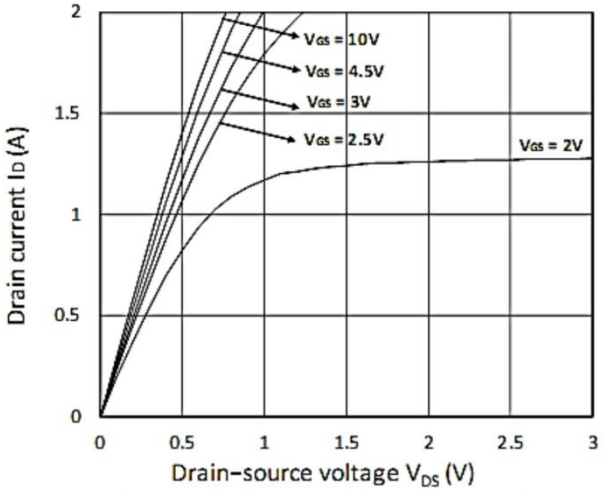


Figure 1. Output Characteristics

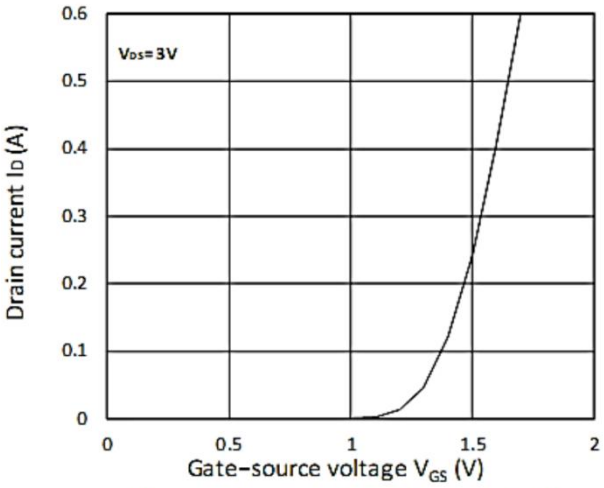


Figure 2. Transfer Characteristics

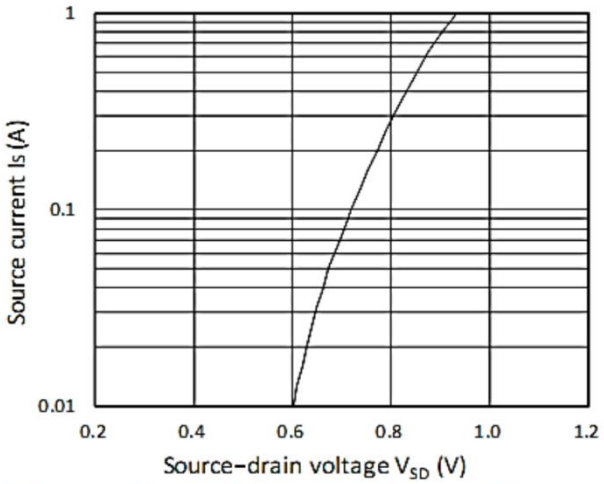


Figure 3. Forward Characteristics of Reverse

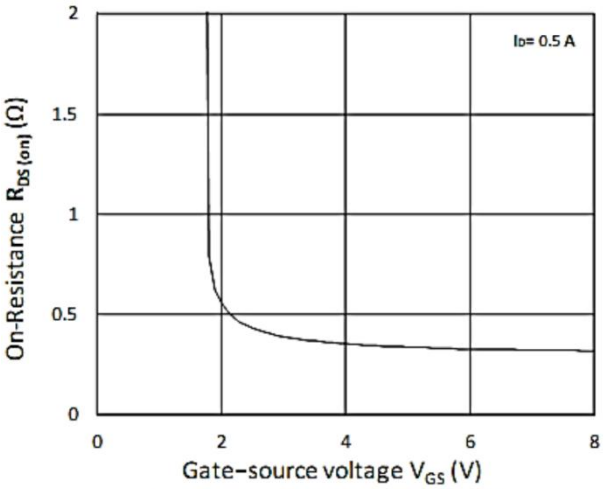


Figure 4. RDS(ON) vs. VGS

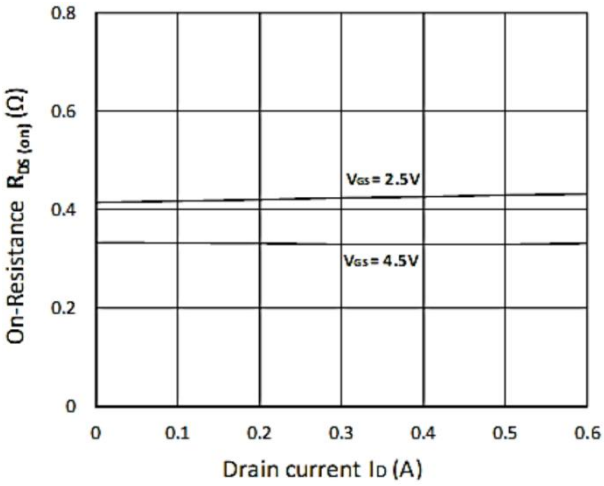


Figure 5. RDS(ON) vs. ID

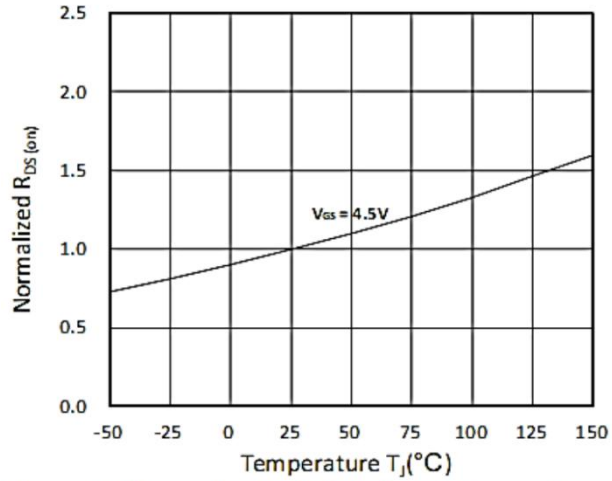


Figure 6. Normalized R DS(on) vs. Temperature

Typical Characteristics

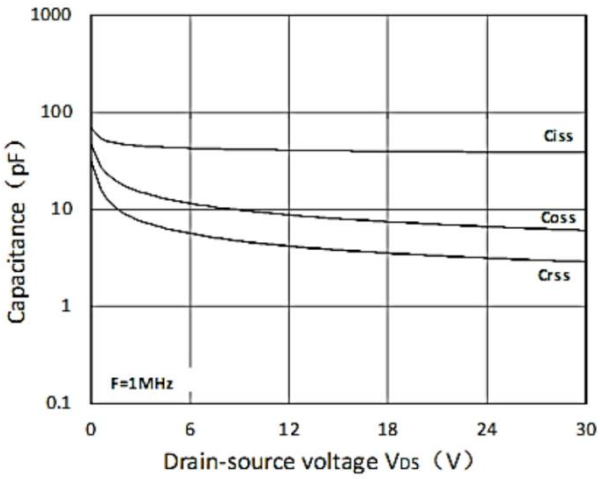


Figure 7. Capacitance Characteristics

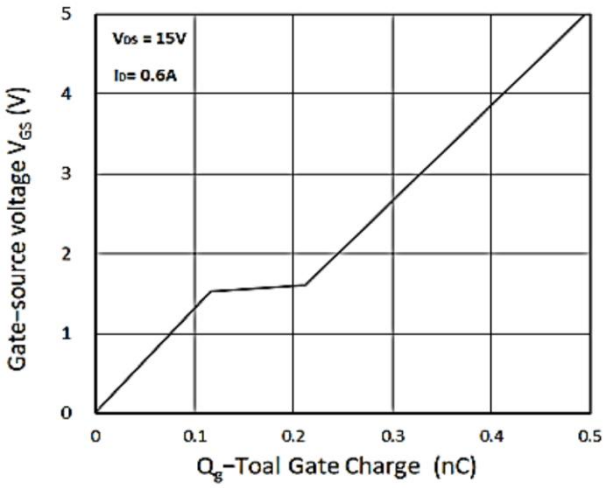
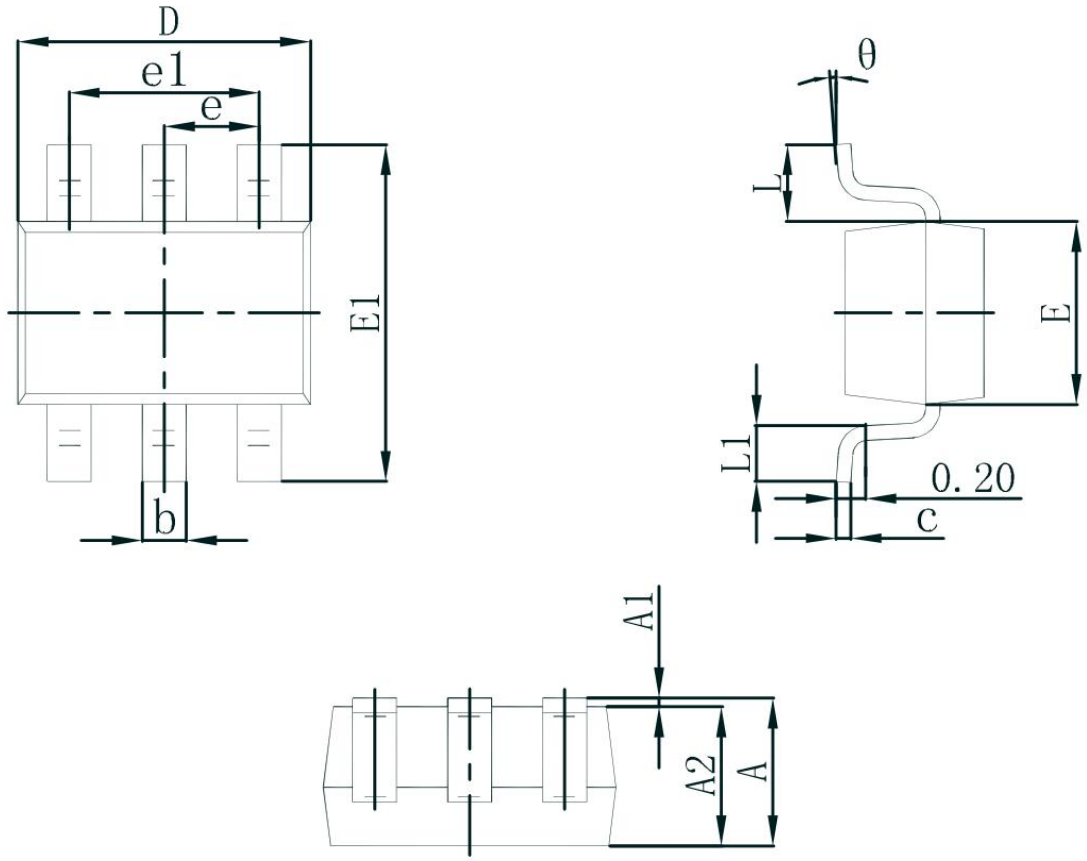


Figure 8. Gate Charge Characteristics

SOT-363 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	1.800	2.200	0.071	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°