

## 30V/26mΩ@10V N-Channel MOSFET

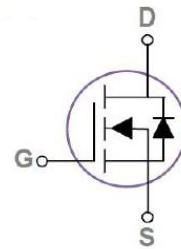
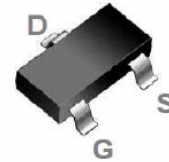
### Features

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

### Applications

- Power Management
- PWM Application
- Load Switch

### SOT23 Pin Configuration



### Maximum Ratings (Tc = 25°C, Unless Otherwise Noted)

Parameters	Symbol	Limits	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	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

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.

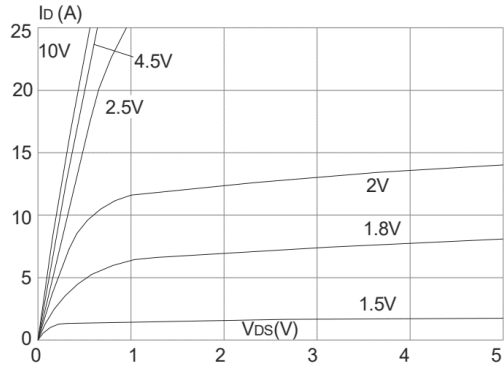


# HL3400ANR

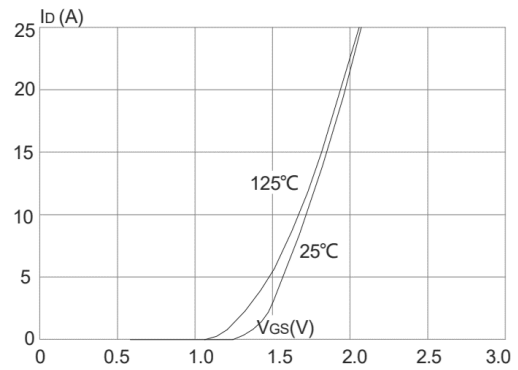
## Electrical Characteristics (T<sub>j</sub> = 25 °C, Unless Otherwise Noted)

Off Characteristics						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain to Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	---	---	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25 °C	---	---	1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	---	---	±100	nA
On Characteristics						
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4.2A	---	19	26	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A	---	23	32	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.9	1.4	V
Dynamic And Switching Characteristics						
Total Gate Charge <sup>3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A	---	7.5	---	nC
Gate-Source Charge <sup>3</sup>	Q <sub>gs</sub>		---	2	---	
Gate-Drain Charge <sup>3</sup>	Q <sub>gd</sub>		---	2	---	
Turn-on Delay Time <sup>3</sup>	T <sub>d(on)</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =4A, V <sub>GS</sub> =4.5V, R <sub>GEN</sub> =3Ω	---	10	---	nS
Turn-on Rise Time <sup>3</sup>	T <sub>r</sub>		---	27	---	
Turn-off Delay Time <sup>3</sup>	T <sub>d(off)</sub>		---	26	---	
Turn-off Fall Time <sup>3</sup>	T <sub>f</sub>		---	33	---	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz	---	702	---	pF
Output Capacitance	C <sub>oss</sub>		---	66	---	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	52	---	
Drain-Source Diode Characteristics And Maximum Ratings						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Continuous Source Current	I <sub>S</sub>	V <sub>GS</sub> = 0V, Force Current	---	---	5.8	A
Pulsed Source Current <sup>3</sup>	I <sub>SM</sub>		---	---	23.2	A
Diode Forward Voltage <sup>3</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =5A, T <sub>J</sub> =25 °C	---	---	1.2	V

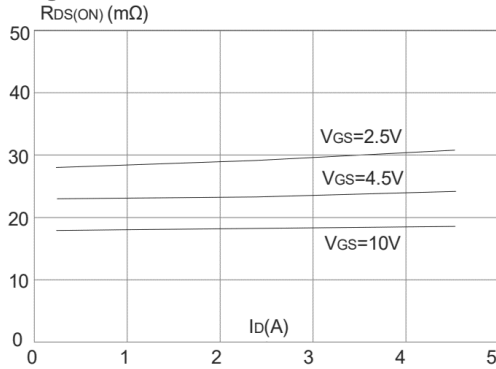
**Figure 1: Output Characteristics**



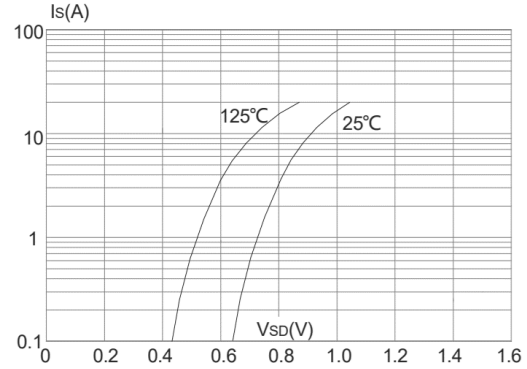
**Figure 2: Typical Transfer Characteristics**



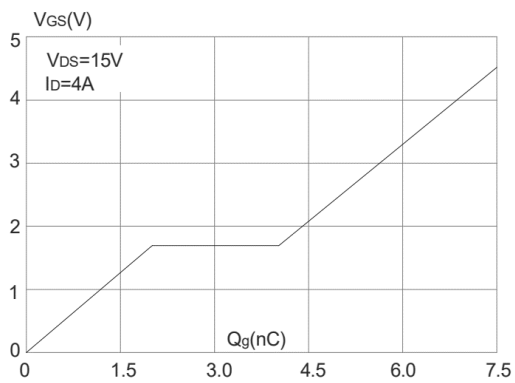
**Figure 3: On-resistance vs. Drain Current**



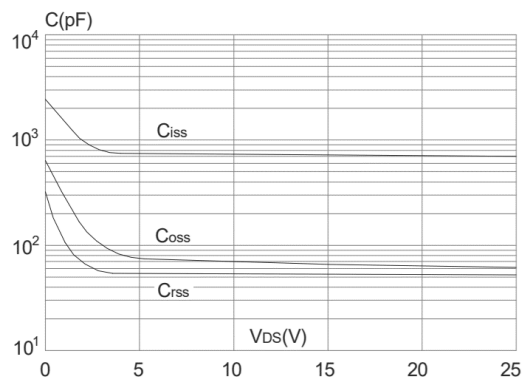
**Figure 4: Body Diode Characteristics**



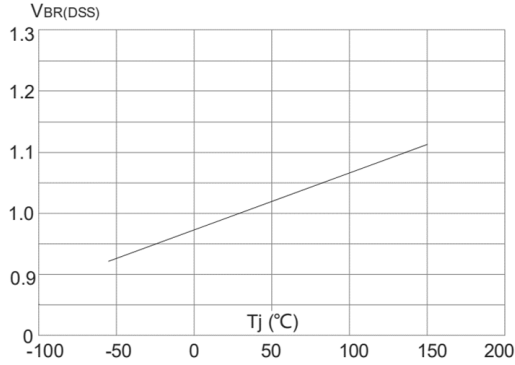
**Figure 5: Gate Charge Characteristics**



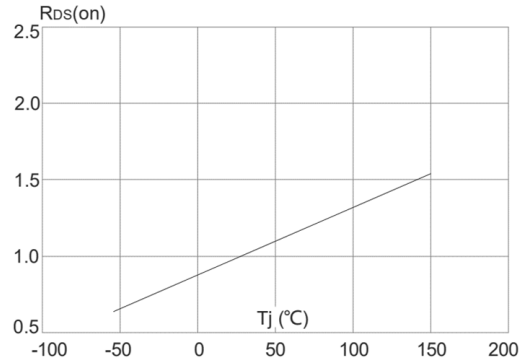
**Figure 6: Capacitance Characteristics**



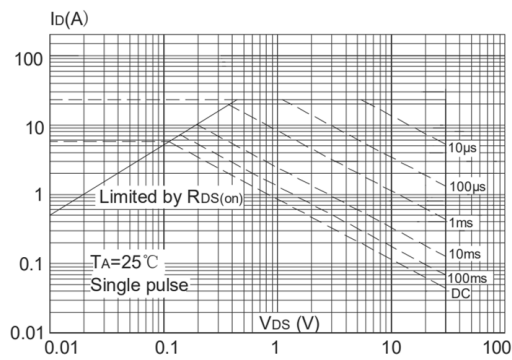
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



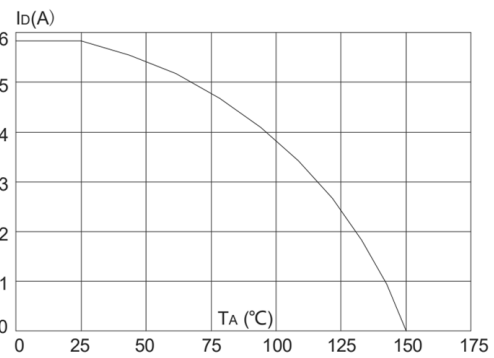
**Figure 8:** Normalized on Resistance vs. Junction Temperature



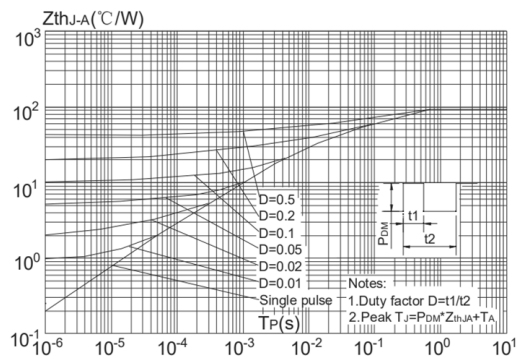
**Figure 9:** Maximum Safe Operating Area



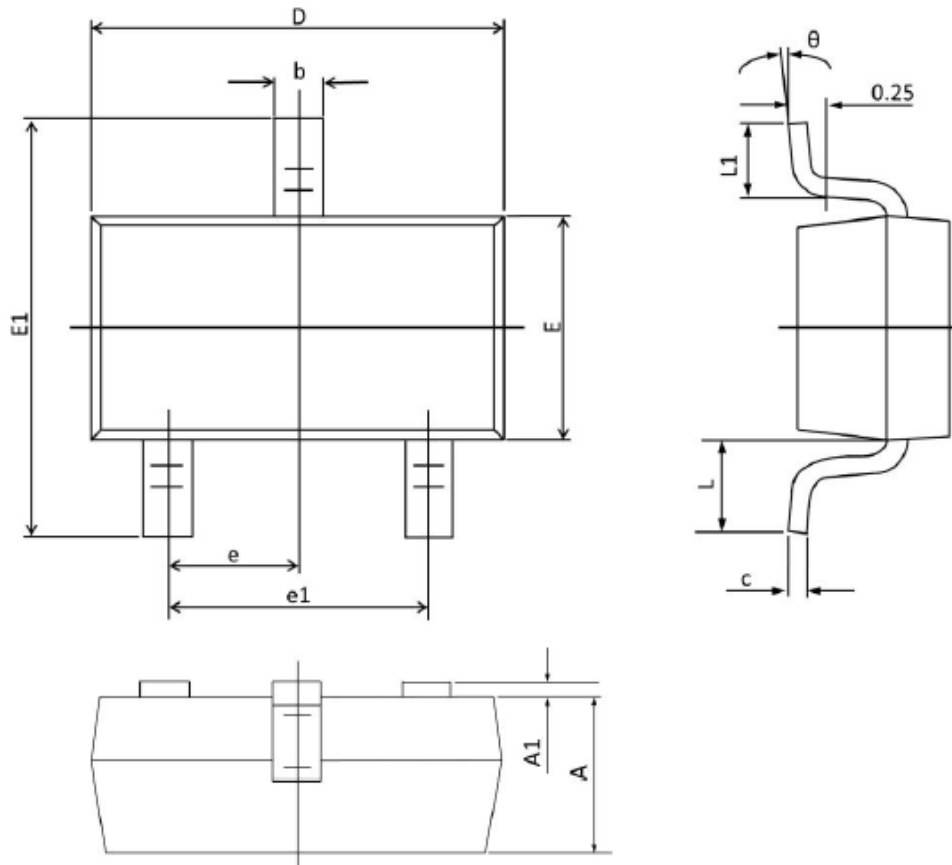
**Figure 10:** Maximum Continuous Drain Current vs. Ambient Temperature



**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
$\theta$	1°	7°	1°	7°



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