HK1001

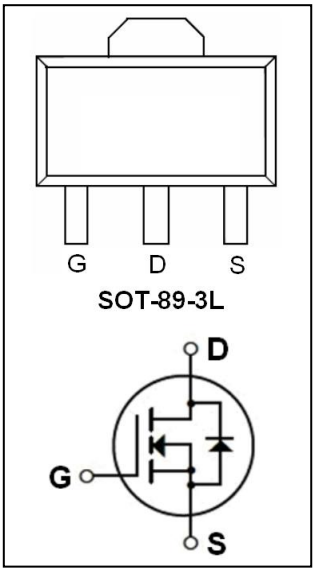
28V N-Channel MOSFET

● Features：

- 20A, 28V,$R_{DS(on)(Typ)}$ =20mΩ@V_{GS}=10V
- Low Gate Charge
- Low C_{rss}
- 100% Avalanche Tested
- Fast Switching
- Improved dv/dt Capability

● Application:

- High Frequency Switching Mode Power Supply
- Active Power Factor Correction



Absolute Maximum Ratings(Tc=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	28	V
I_D	Drain Current - Continuous(Tc=25°C)	20*	A
	- Continuous(Tc=100°C)	12.6*	A
I_{DM}	Drain Current -Pulsed	80*	A
V_{GSS}	Gate-Source Voltage	±20	V
E_{AS}	Single Pulsed Avalanche Energy （Limit Reference Value） (Note5)	10.9	mJ
P_D	Power Dissipation(T_C =25°C)	5.3	W
	-Derate above 25°C	0.042	W/°C
Tj	Operating Junction Temperature	150	°C
Tstg	Storage Temperature Range	-55 to+150	°C

Thermal Characteristics

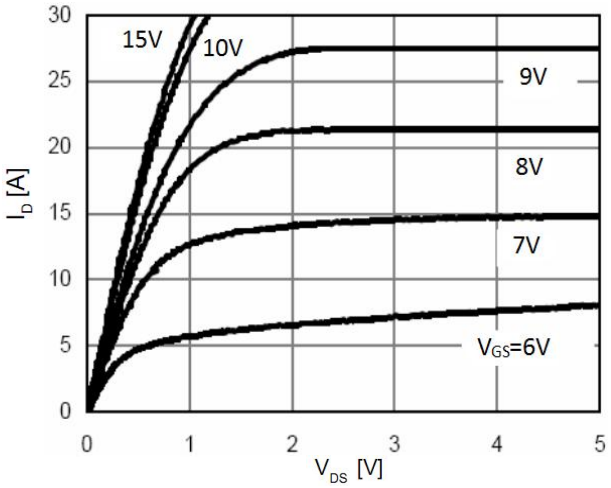
Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case (Note2)	23.6	°C /W

Electrical Characteristics(Tc=25°C unless otherwise noted)

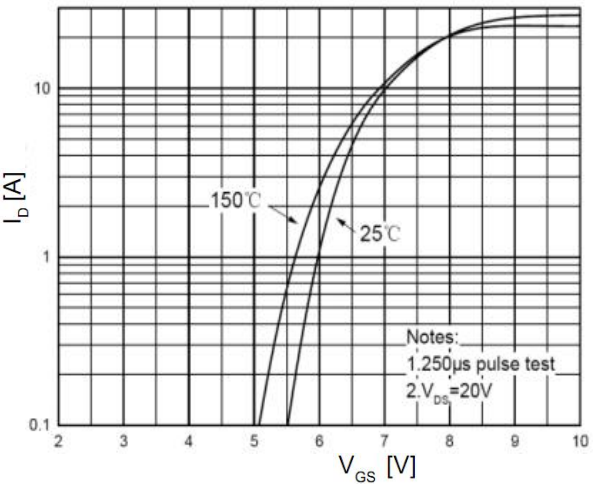
Symbol	Parameter	Test Conditons	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-source Breakdown Voltage	V_{GS}=0V ,I_D=250μA	28	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=28V,V_{GS}=0V	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current,Forward	V_{GS}=+20V, V_{DS}=0V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current,Reverse	V_{GS}=-20V, V_{DS}=0V	--	--	-100	nA
On Characteristics (Note3)						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	3.0	4.0	5.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS}=10 V, I_D=10A	--	20	28	mΩ
Dynamic Characteristics (Note4)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz	--	485	--	pF
C_{oss}	Output Capacitance		--	87	--	pF
C_{rss}	Reverse Transfer Capacitance		--	65	--	pF
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 25 V, I_D =10 A, R_G =2. 5 Ω, V_{GS}=10V	--	9.6	--	ns
t_r	Turn-On Rise Time		--	13	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	18	--	ns
t_f	Turn-Off Fall Time		--	6.3	--	ns
Q_g	Total Gate Charge	V_{DS} = 25 V, I_D =10A, V_{GS} = 10 V	--	14.9	--	nC
Q_{gs}	Gate-Source Charge		--	2.3	--	nC
Q_{gd}	Gate-Drain Charge		--	4.5	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current (Note2)		--	--	20	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	80	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} =0V,I_S=10A (Note3)	--	--	1.3	V

Notes:
1、Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature.
2、Surface Mounted on FR4 Board, t ≤ 10 sec.
3、Pulse Test : Pulse Width ≤300 μ s, Duty Cycle≤2%.
4、Guaranteed by design, not subject to production.
5、EAS condition：L = 0.5mH, I_{AS} =5A, V_{DD} = 15V, R_G = 25 Ω, Starting T_J = 25°C.

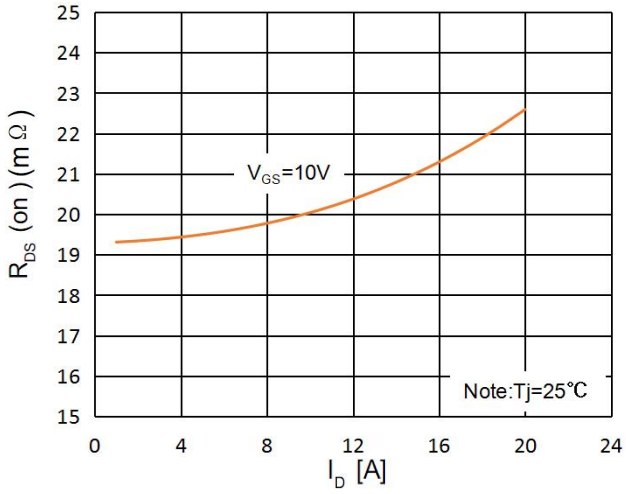
On-Regin Characteristics



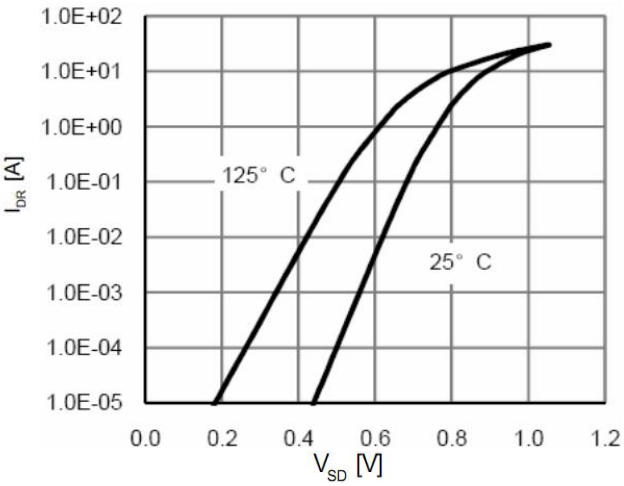
Transfer Characteristics



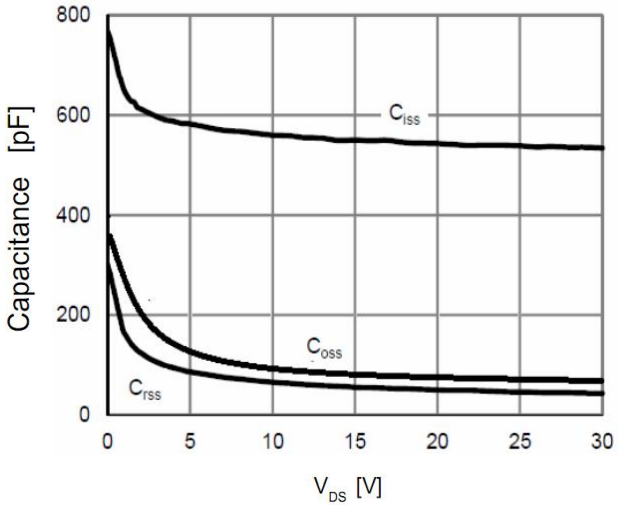
On-Resistance Variation vs. Drain Current and Gate Voltage



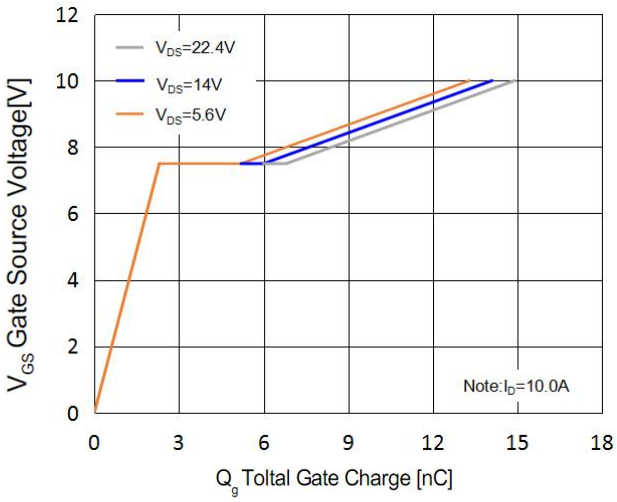
Body Diode Forward Voltage Variation vs. Source Current and Temperature



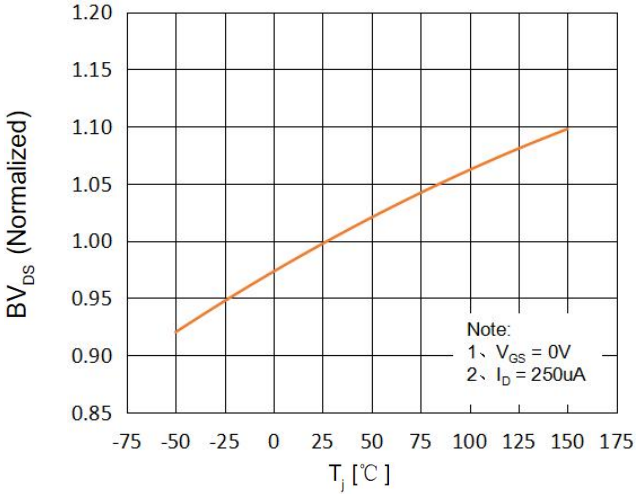
Capacitance Characteristics



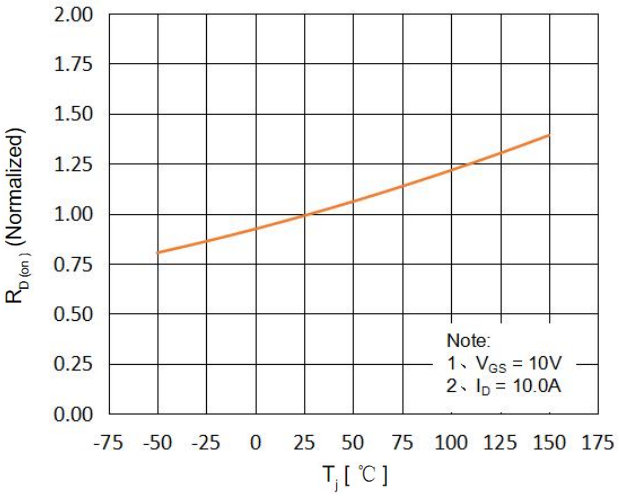
Gate Charge Characteristics



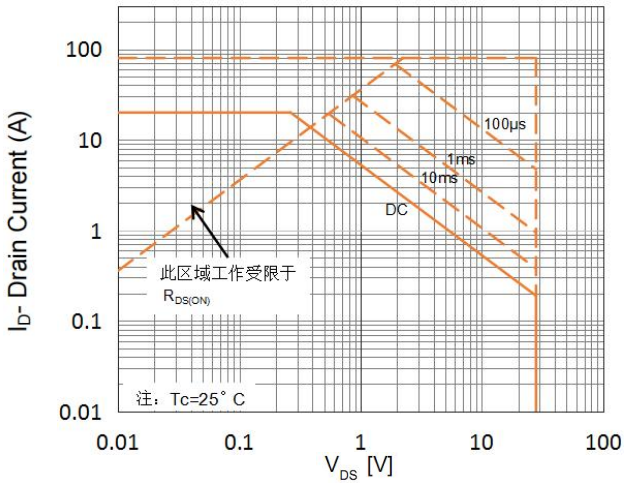
Breakdown Voltage Variation vs. Temperature



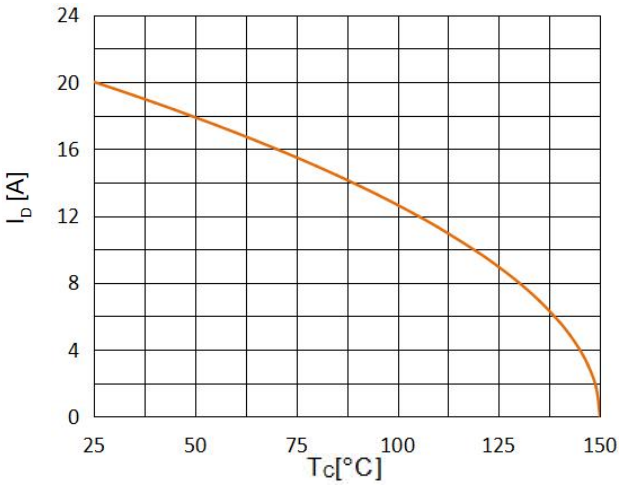
On-Resistance Variation vs. Temperature



Maximum Safe Operating Area



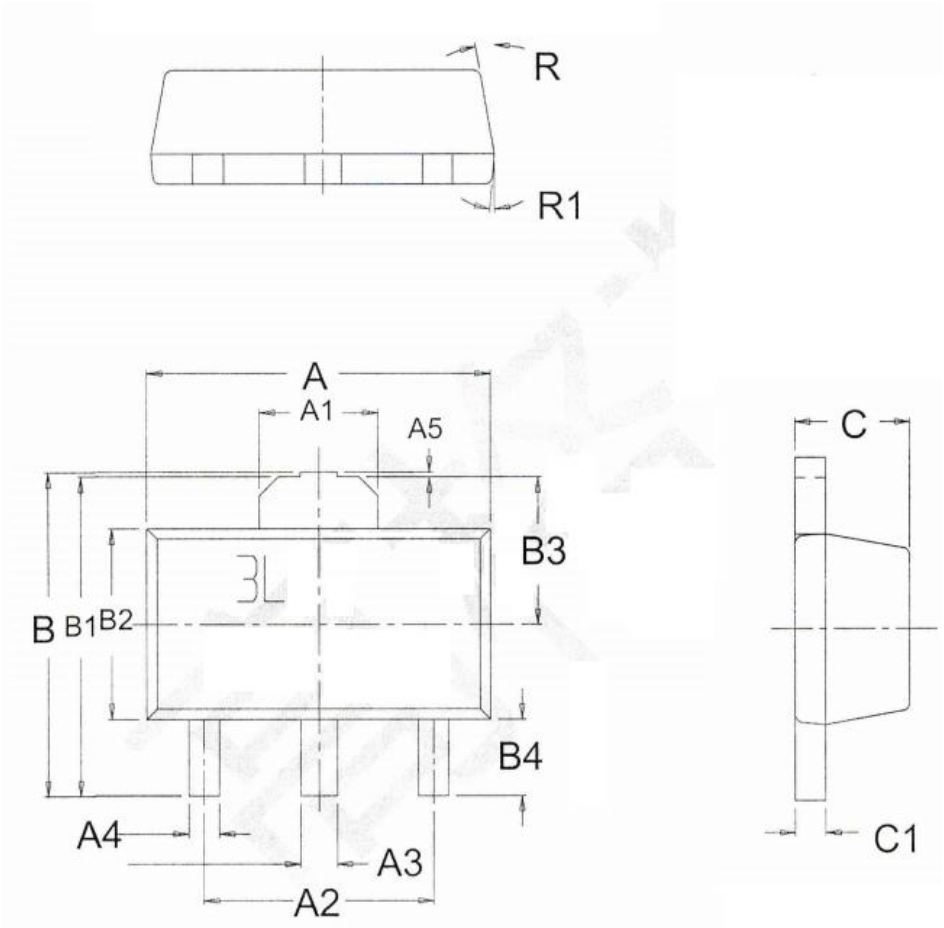
Maximum Drain Current Vs. Case Temperature



SOT-89-3L Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.40	4.50	4.60	B1	3.98	4.18	4.38
A1	1.45	1.55	1.65	B2	2.40	2.50	2.60
A2		3.00		B3	1.83	1.93	2.03
A3	0.43	0.48	0.53	B4	0.90	1.00	1.10
A4	0.35	0.40	0.45	C	1.40	1.50	1.60
A5	0.02	0.06	0.10	C1	0.35	0.40	0.45
B	4.04	4.24	4.44	R		10°	
				R1		5°	



注意事项：

1、在电路设计时请不要超过器件的最大额定值，否则会影响整机的可靠性。

2、MOSFET产品为静电敏感型器件，使用时应注意采取防静电保护措施，如佩戴防静电手环、设备接地等。

3、如需安装散热片，请注意控制扭力大小及散热片的平整度。

4、该规格书由华科公司制作，并可能不定期更改，恕不另行通知。

5、如有疑问，请及时联系我司销售代表。

版本履历表：

序号	版本号	修改时间	修改记录
1	V1.0	2022-12-1	首次发行