HTD100N03-U

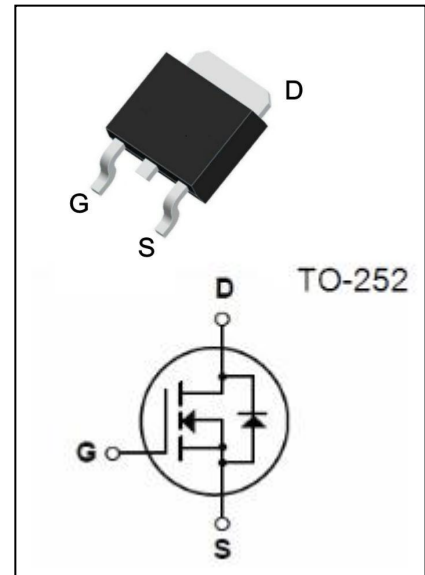## 30V N-Channel MOSFET

● **Features：**

■ 100A, 30V,$R_{DS(on)(Typ)}$ =3.3mΩ@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	30	V
I_D	Drain Current - Continuous(Tc=25°C，Silicon limit)	100	A
	Drain Current - Continuous(Tc=25°C，Package limit)	80	A
	Drain Current - Continuous(Tc=100°C，Silicon limit)	63.2	A
I_{DM}	Drain Current -Pulsed	240*	A
V_{GSS}	Gate-Source Voltage	±20	V
E_{AS}	Single Pulsed Avalanche Energy （Limit Reference Value） (Note5)	119	mJ
P_D	Power Dissipation(T_C =25°C)	58	W
	-Derate above 25°C	0.46	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)	2.16	°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	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,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	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS}=10 V, I_D=40A	--	3.3	4.5	mΩ
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS}=4.5 V, I_D=40A	--	5.5	7.5	mΩ
Dynamic Characteristics (Note4)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz	--	3130	--	pF
C_{oss}	Output Capacitance		--	353	--	pF
C_{rss}	Reverse Transfer Capacitance		--	305	--	pF
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 15 V, I_D =20 A, R_G =2.5Ω, V_{GS}=10V	--	13.5	--	ns
t_r	Turn-On Rise Time		--	18	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	59	--	ns
t_f	Turn-Off Fall Time		--	17	--	ns
Q_g	Total Gate Charge	V_{DS} =15 V, I_D =20A, V_{GS} = 10 V	--	51	--	nC
Q_{gs}	Gate-Source Charge		--	12	--	nC
Q_{gd}	Gate-Drain Charge		--	11	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current (Note2)		--	--	100	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	240	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} =0V,I_S=40A (Note3)	--	--	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS} =0V, I_S=20A, d I_F /dt=100A/µs (Note3)	--	42	--	ns
Q_{rr}	Reverse Recovery Charge		--	33	--	nC

Notes:
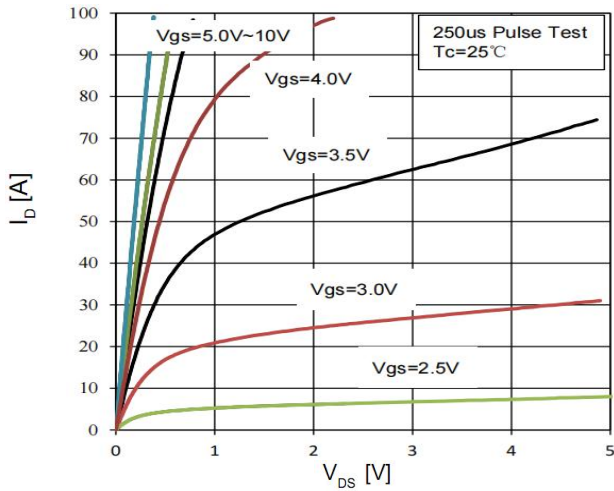
1、Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature.

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} =17A, V_{DD} = 20V, R_G = 25 Ω, Starting T_J = 25°C.
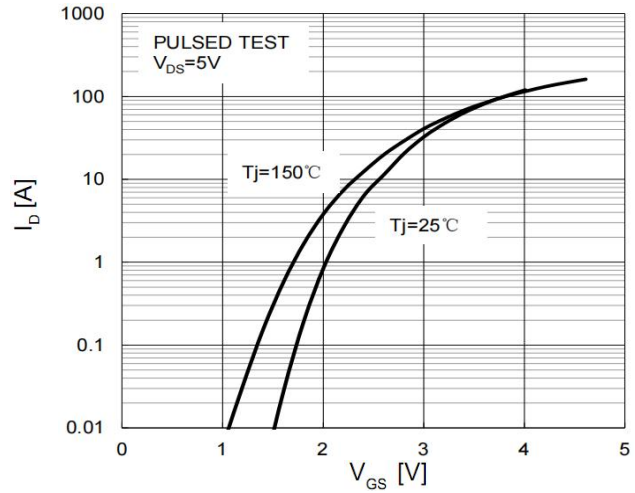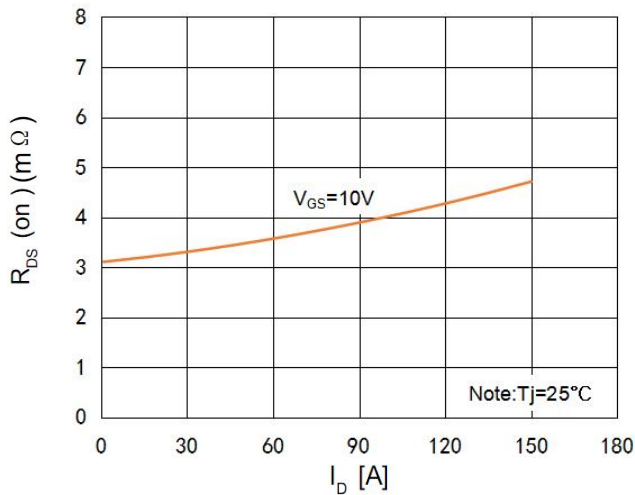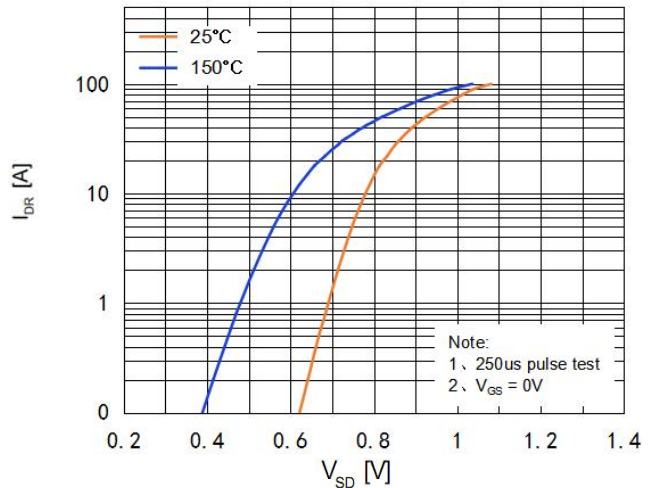
On-Regin Characteristics
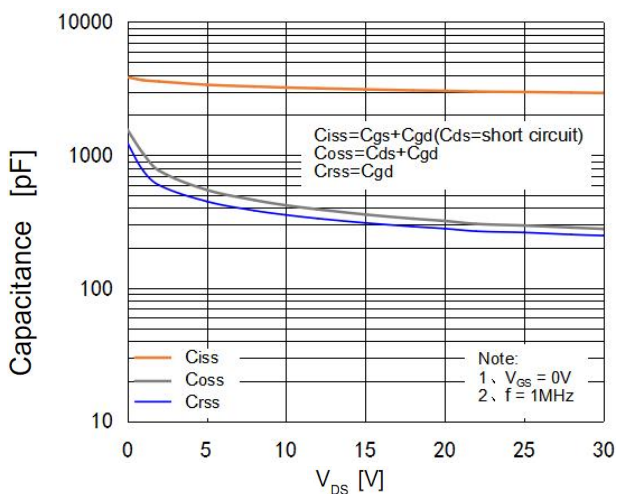

Transfer Characteristics

On-Resistance Variation vs. Drain Current and Gate Voltage
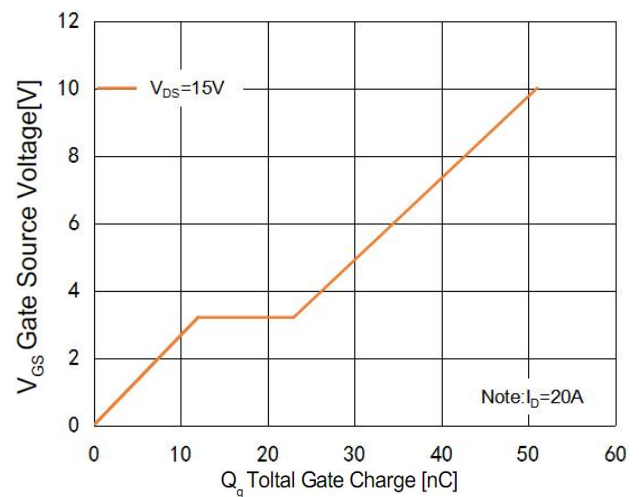

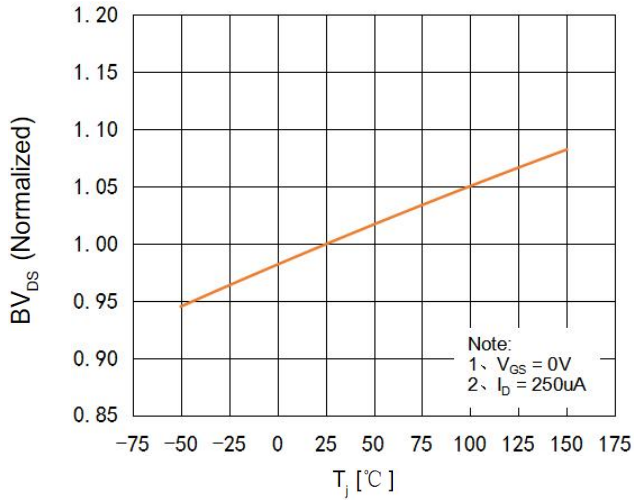## Body Diode Forward Voltage Variation vs. Source Current and Temperature
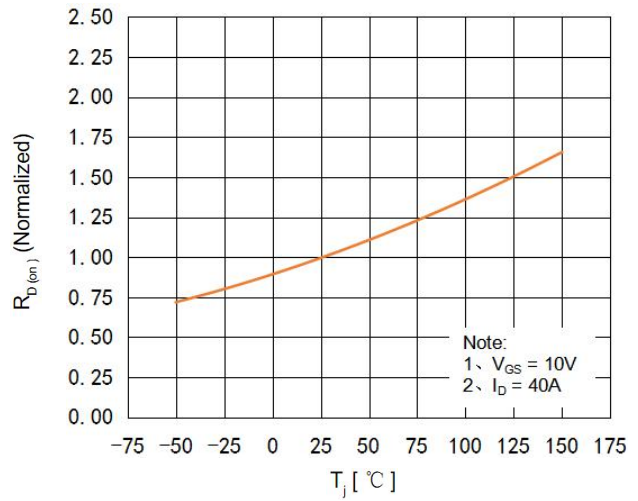

Capacitance Characteristics
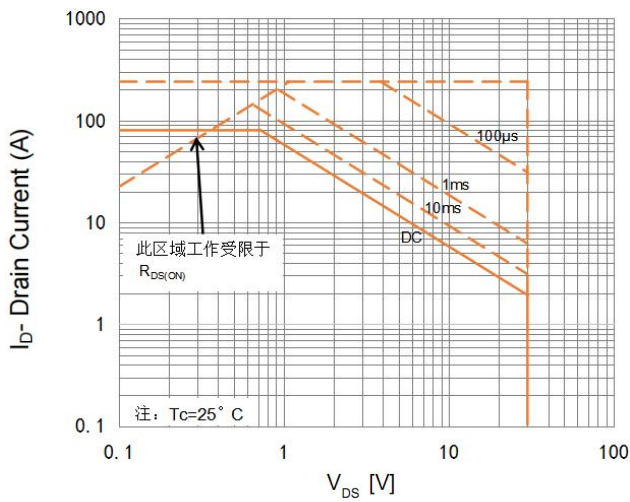

Gate Charge Characteristics

Breakdown Voltage Variation vs. Temperature

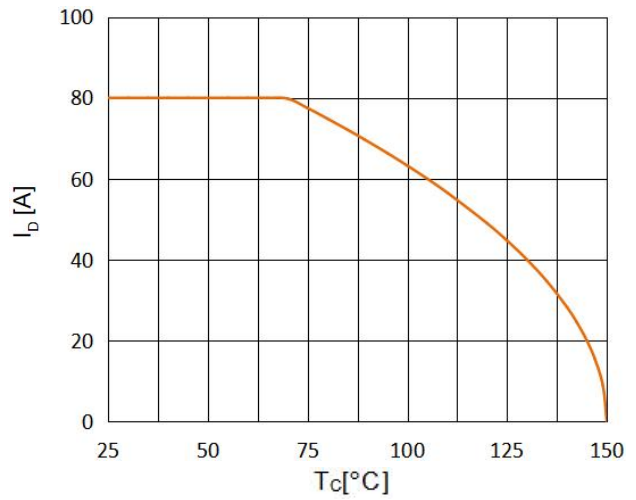## On-Resistance Variation vs. Temperature

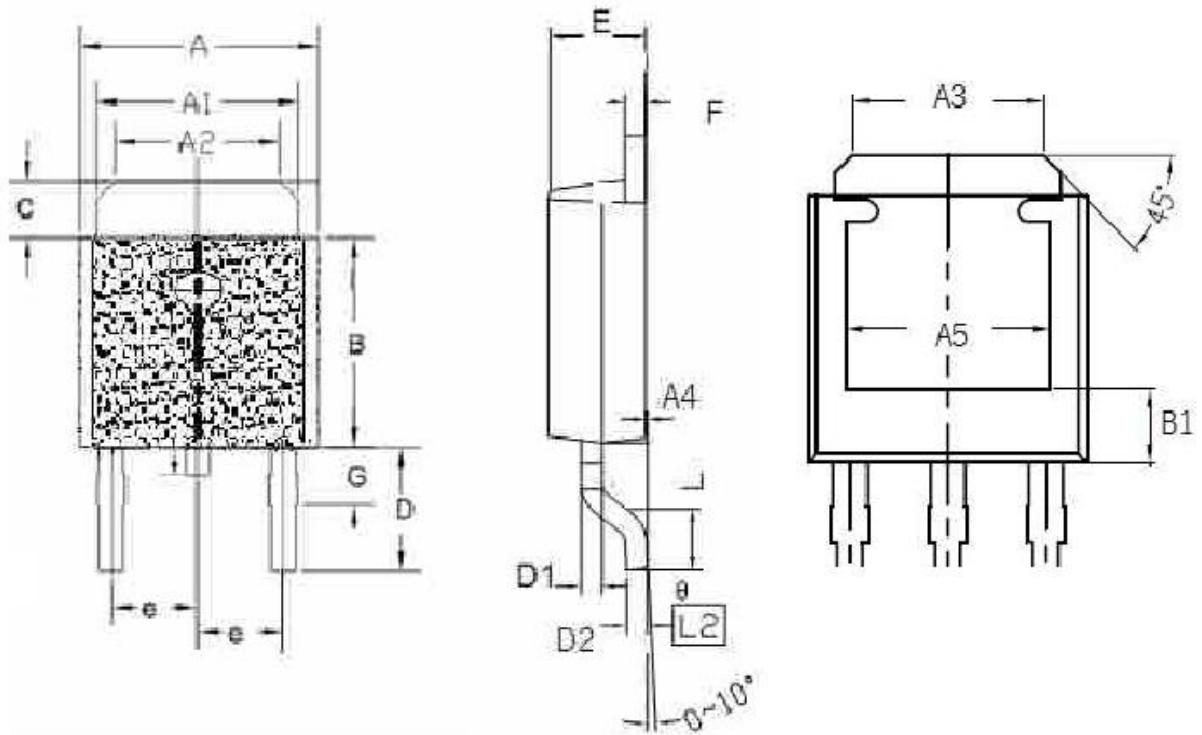## Maximum Safe Operating Area

Maximum Drain Current Vs. Case Temperature

TO-252 Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	6.40		6.60	D	2.90		3.10
A1	5.20		5.40	D1	0.45		0.55
A2	4.40		4.60	D2	0.45		0.55
A3	4.40		4.60	e		2.30	
A4	0		0.15	E	2.20		2.40
A5	4.65		4.95	F	0.45		0.55
B	5.90		6.20	G		1.70	
B1	1.57		1.77	L	1.40		1.60
C	0.90		0.96	θ（度）	0		10.00

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	2023-9-20	首次发行