Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	0.6mΩ@10V	290A
	0.9mΩ@4.5V	

合肥矽普半导体
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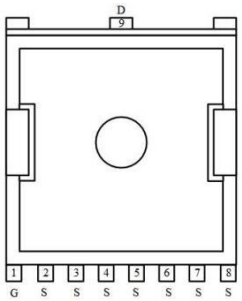
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

Applications

- Power switching application
- DC-DC Converter
- Power Management

Package



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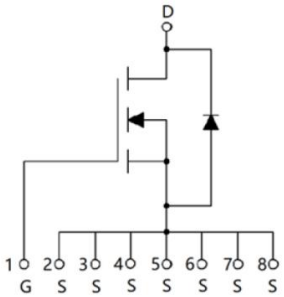
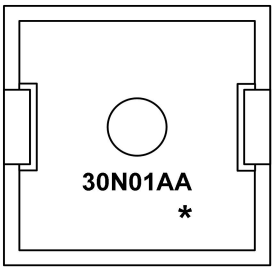
Circuit diagram



Marking



30N01AA : **Product code**
***** : **Month code**

Order Information

Device	Package	Unit/Tape
SP30N01AATO	TOLL	2000

Absolute maximum ratings (Ta=25℃,unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current1 (Tc=25℃)	I_D	290	A
Continuous Drain Current1 (Tc=100℃)	I_D	193	A
Pulsed Drain Current	I_{DM}	1160	A
Single Pulse Avalanche Energy[1]	E_{AS}	673	mJ
Power Dissipation (Tc=25℃)	P_D	320	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.39	℃/W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

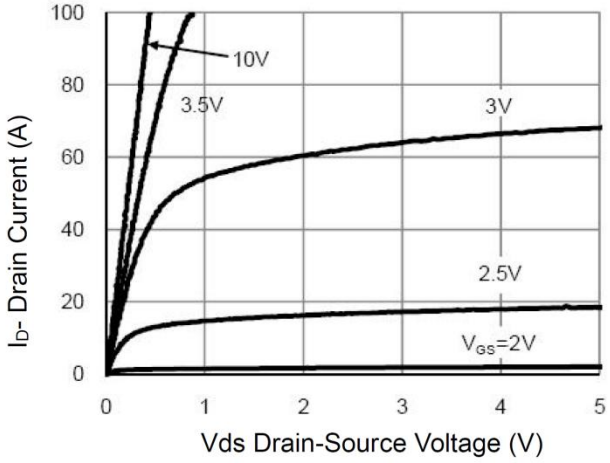
Electrical characteristics (Ta=25℃, unless otherwise noted)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	ID = 250μA, VGS = 0V	30	34	-	V
Drain Cut-Off Current	I_{DSS}	VDS = 24V, VGS = 0V	-	-	1	μA
Gate Leakage Current	I_{GSS}	VGS = ±20V, VDS = 0V	-	-	±0.1	
Gate Threshold Voltage	$V_{GS(th)}$	VDS = VGS, ID = 250μA	1	1.8	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	VGS = 10V, ID = 30A	-	0.6	0.75	mΩ
		VGS = 4.5V, ID = 20A	-	0.9	1.2	
Dynamic Characteristics						
Input Capacitance	C_{iss}	VDS =15V, VGS = 0V, f = 1.0MHz	-	12548	-	pF
Output Capacitance	C_{oss}		-	1726	-	
Reverse Transfer Capacitance	C_{rss}		-	1064	-	
Total Gate Charge	Q_g	VDS=15V , VGS=10V , ID=160A	-	230	-	nC
Gate-Source Charge	Q_{gs}		-	30	-	
Gate-Drain Charge	Q_{gd}		-	55	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	VGS = 10V, VDS = 15V, RL = 15Ω RG = 2.5Ω	-	15	-	nS
Rise Time	t_r		-	205	-	
Turn-Off Delay Time	$t_{d(off)}$		-	83	-	
Fall Time	t_f		-	127	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V_{SD}	I_S = 1A, VGS = 0V	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	193	A
Body Diode Reverse Recovery Time	Trr	I_S=50A, di/dt=100A/us, TJ=25℃	-	65	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	178	-	nC

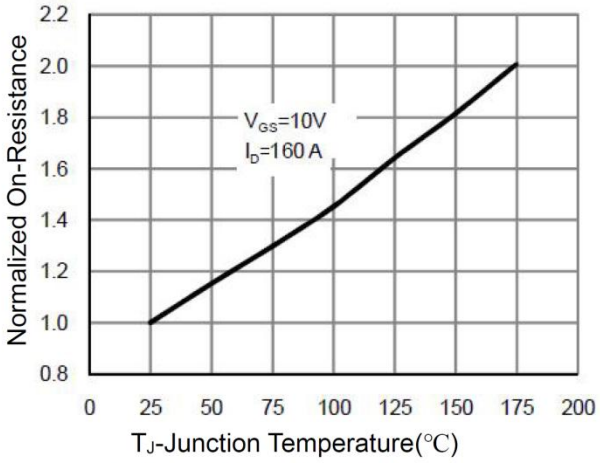
Note :

1. The test condition is VDD=30V,VGS=10V,L=0.3mH,RG=25Ω;

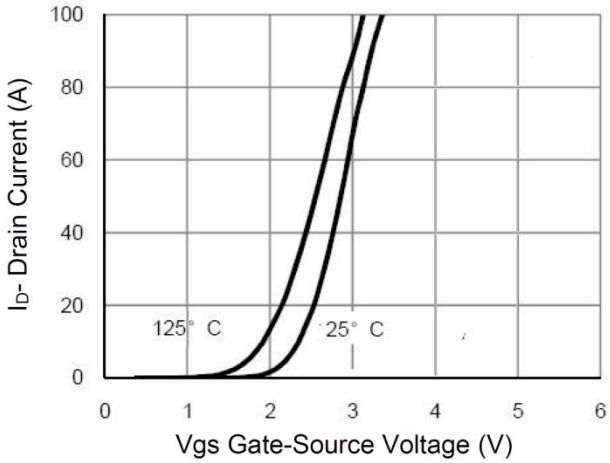
Typical Characteristics



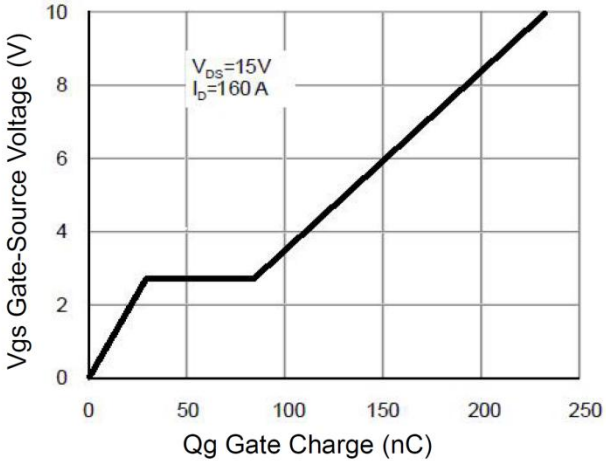
Output Characteristics



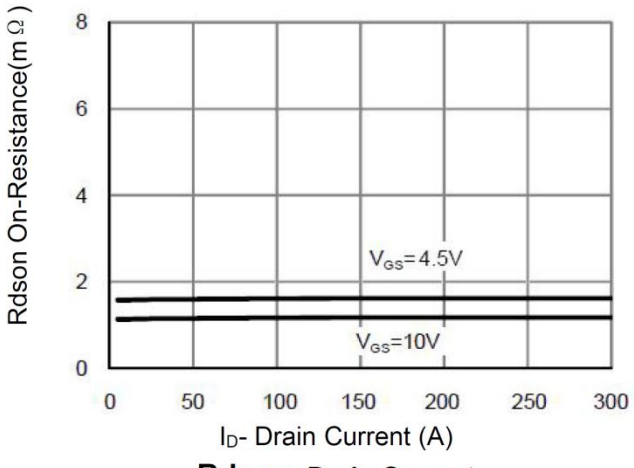
Rdson-JunctionTemperature



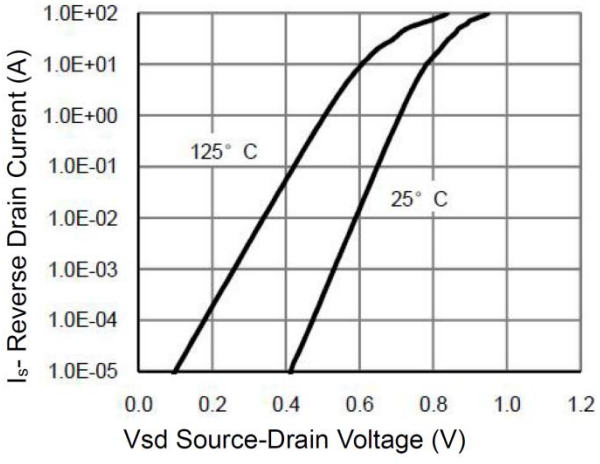
Transfer Characteristics



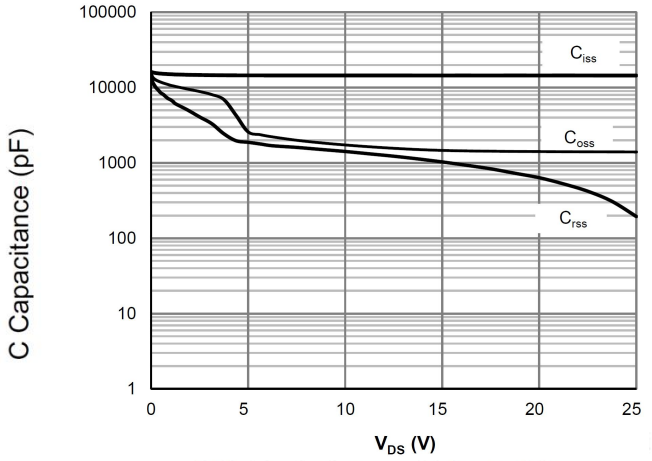
Gate Charge



Rdson- Drain Current

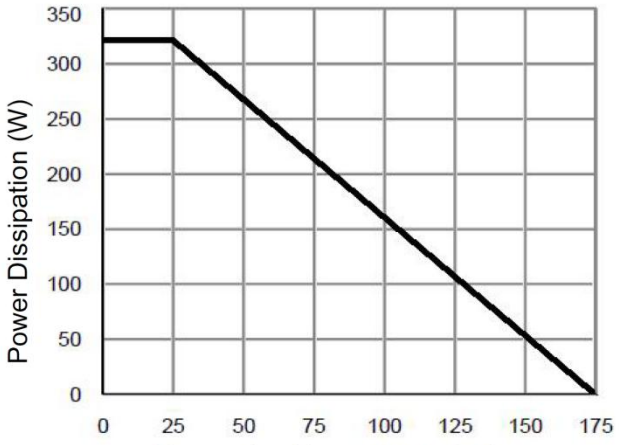


Source- Drain Diode Forward



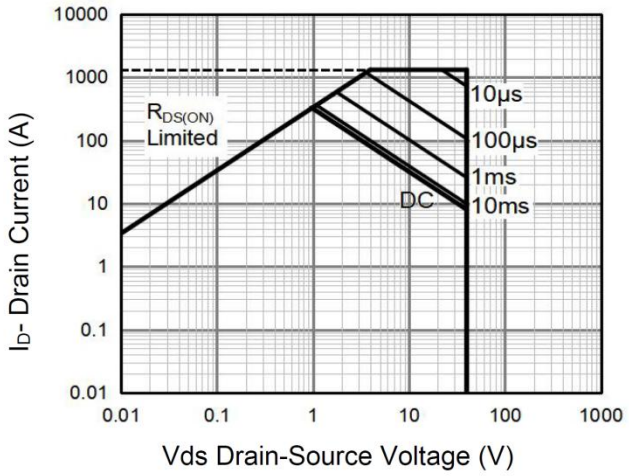
Vds Drain-Source Voltage (V)

Capacitance vs Vds



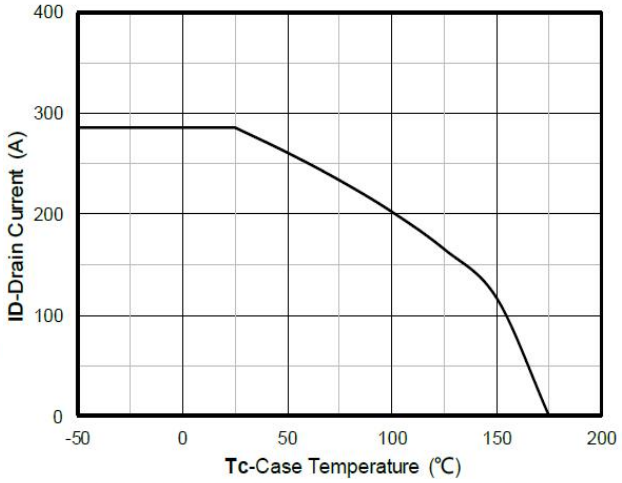
TJ-Junction Temperature (°C)

Power De-rating



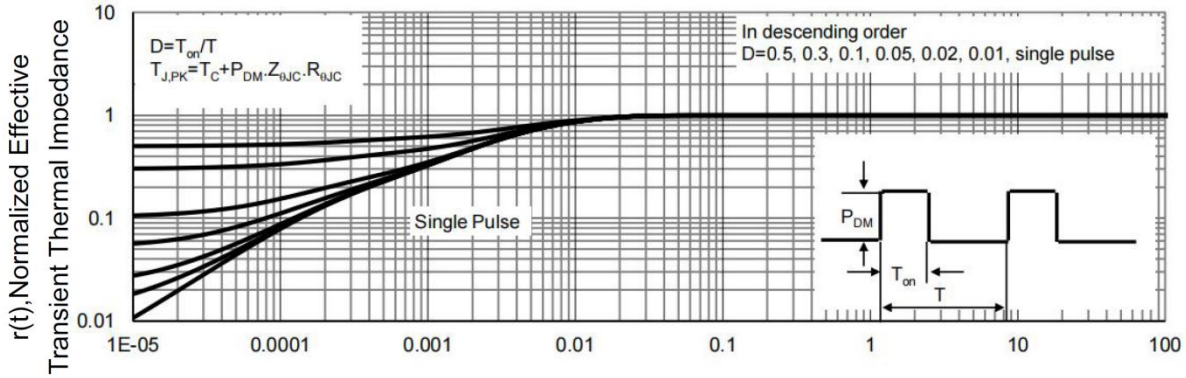
Vds Drain-Source Voltage (V)

Safe Operation Area



Tc-Case Temperature (°C)

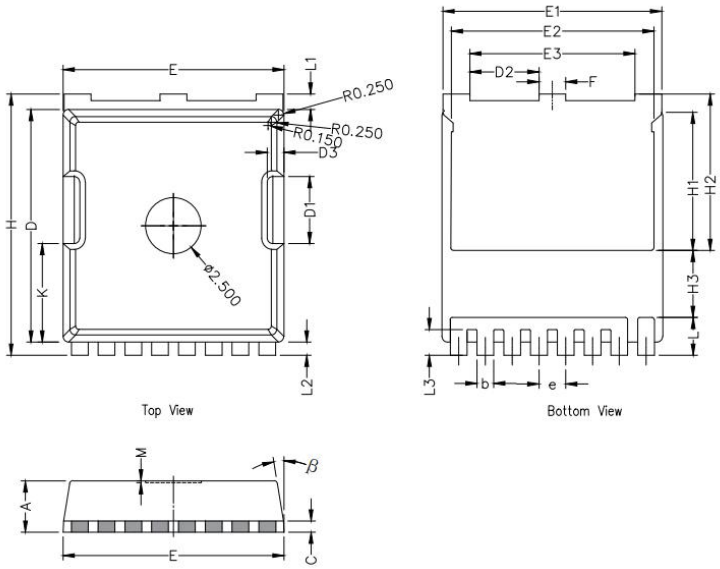
Current vs Junction Temperature



Square Wave Pluse Duration (sec)

Normalized Maximum Transient Thermal Impedance

TOLL Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
C		0.508 REF	
D	10.25	10.40	10.55
D1	2.85	3.00	3.15
E	9.75	9.90	10.05
E1	9.65	9.80	9.95
E2	8.95	9.10	9.25
E3	7.25	7.40	7.55
e		1.20 BSC	
F	1.05	1.20	1.35
H	11.55	11.70	11.85
H1	6.03	6.18	6.33
H2	6.85	7.00	7.15
H3		3.00 BSC	
L	1.55	1.70	1.85
L1	0.55	0.7	0.85
L2	0.45	0.6	0.75
M		0.08 REF.	
β	8°	10°	12°
K	4.25	4.40	4.55