

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
120V	9.0mΩ@10V	65A



**合肥矽普半导体**

Siliup Semiconductor Technology Co., Ltd

技术 品质 服务

www.siliup.com

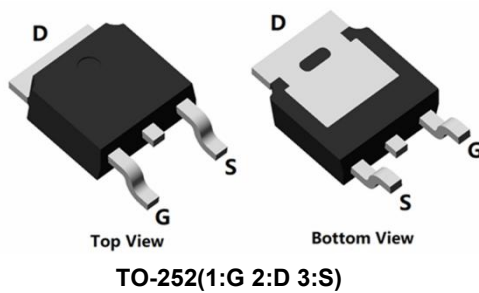
## Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

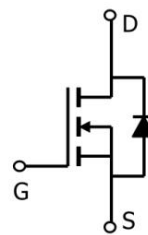
## Applications

- Power switching application
- Battery management
- Uninterruptible power supply

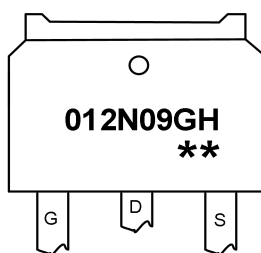
## Package



## Circuit diagram



## Marking



012N09GH : Product code  
\*\* : Week code

## Order Information

Device	Package	Unit/Tube
SP012N09GHTH	TO-252	2500

**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	120	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C)	$I_D$	65	A
Continuous Drain Current (Tc=100°C)	$I_D$	45	A
Pulsed Drain Current	$I_{DM}$	260	A
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	272	mJ
Power Dissipation (Tc=25°C)	$P_D$	96	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.3	°C/W
Storage Temperature Range	$T_{STG}$	55 to 150	°C
Operating Junction Temperature Range	$T_J$	55 to 150	°C

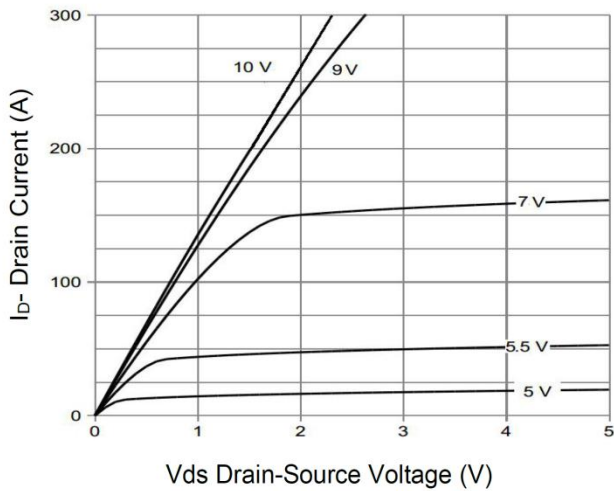
**Electrical characteristics (Ta=25°C, unless otherwise noted)**

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	VGS=0 V, ID=250 μA	100	-	-	V
Drain Cut-Off Current	I <sub>DSS</sub>	VDS=120 V, VGS=0 V	-	-	1	uA
Gate Leakage Current	I <sub>GSS</sub>	VGS=±20 V	-	-	±0.1	nA
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250 μA	2	3	4	V
Drain-Source ON Resistance	RDS(ON)	VGS=10 V, ID=30 A	-	9	12	mΩ
Dynamic Characteristics						
Input Capacitance	Ciss	VDS =60V, VGS = 0V, f = 1.0MHz	-	3045	-	pF
Output Capacitance	Coss		-	280	-	
Reverse Transfer Capacitance	Crss		-	22	-	
Total Gate Charge	Qg	VDS=60V , VGS=10V , ID=30A	-	54	-	nC
Gate-Source Charge	Qgs		-	21	-	
Gate-Drain Charge	Qgd		-	14	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	VGS = 20V, VDS =60V, ID=50A RG = 4.7Ω	-	16	-	nS
Rise Time	tr		-	9.5	-	
Turn-Off Delay Time	td(off)		-	35	-	
Fall Time	tf		-	8.4	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	VSD	VGS=0V , IS=1A , TJ=25℃	-	-	1.2	V
Maximum Body-Diode Continuous Current	IS		-	-	65	A
Reverse Recovery Time	Trr	IS=20A, di/dt=100A/us, TJ=25℃	-	80	-	nS
Reverse Recovery Charge	Qrr		-	156	-	nC

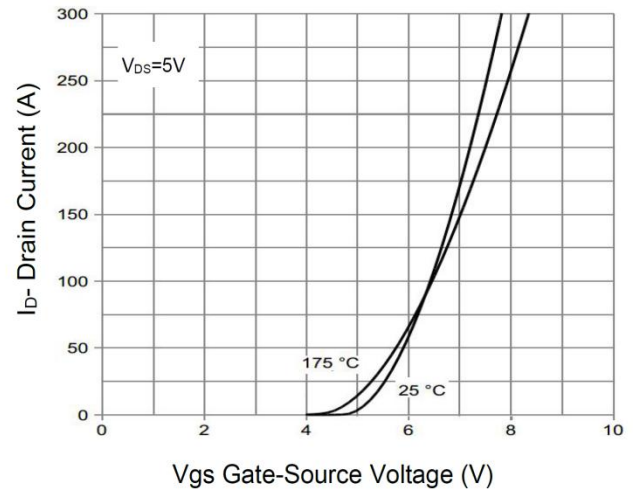
**Note:**

- The EAS test condition is  $V_{DD}=50\text{ V}, V_{GS}=10\text{ V}, L=0.5\text{ mH}, R_G=25\text{ }\Omega$

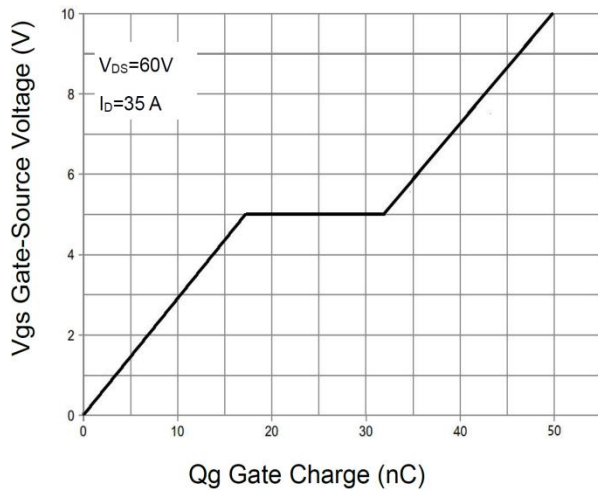
## Typical Characteristics



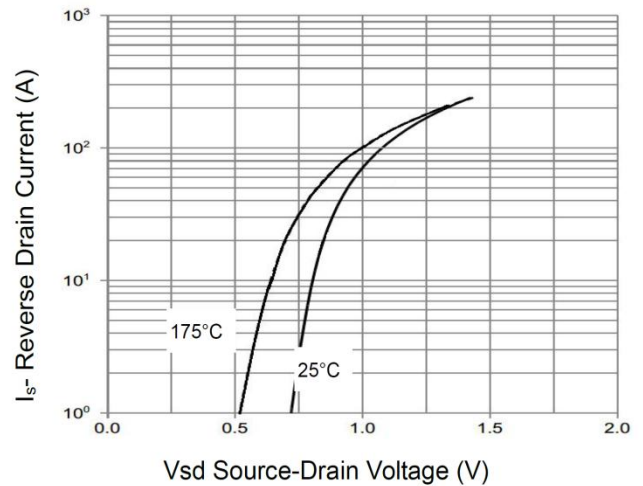
**Output Characteristics**



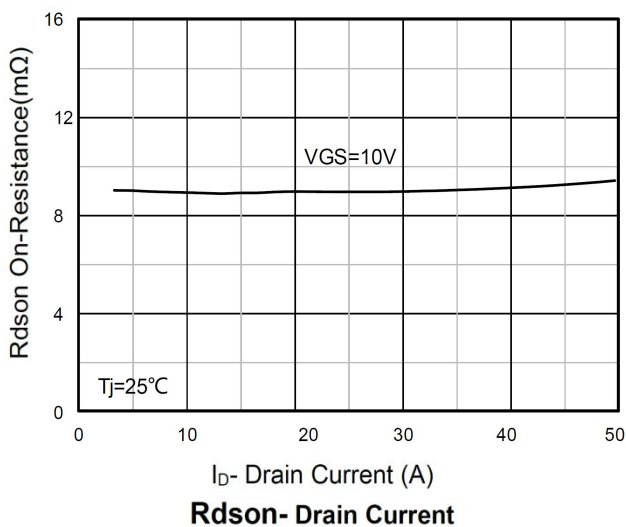
**Transfer Characteristics**



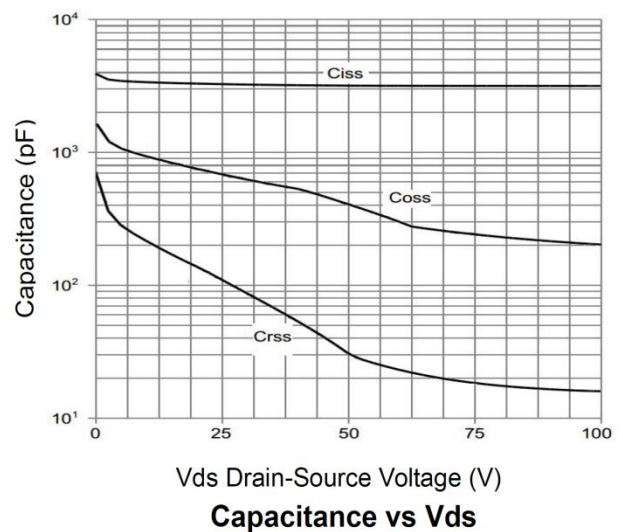
**Gate Charge**



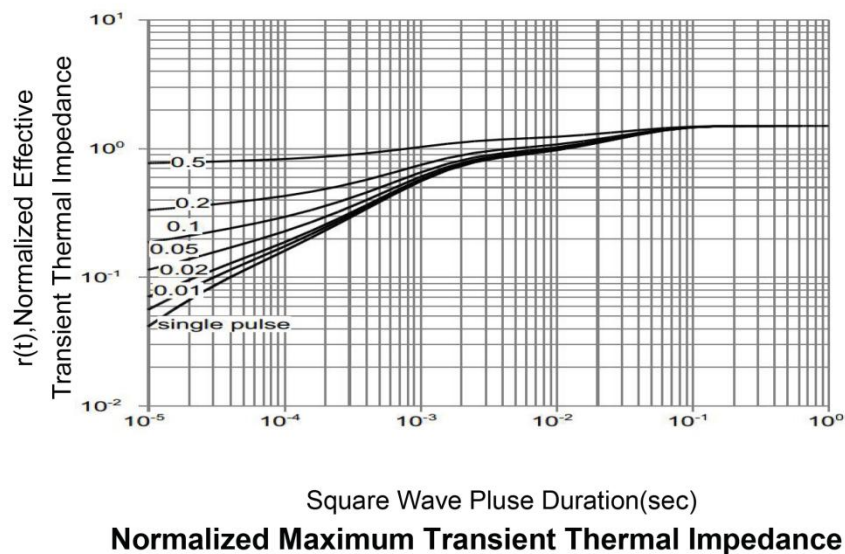
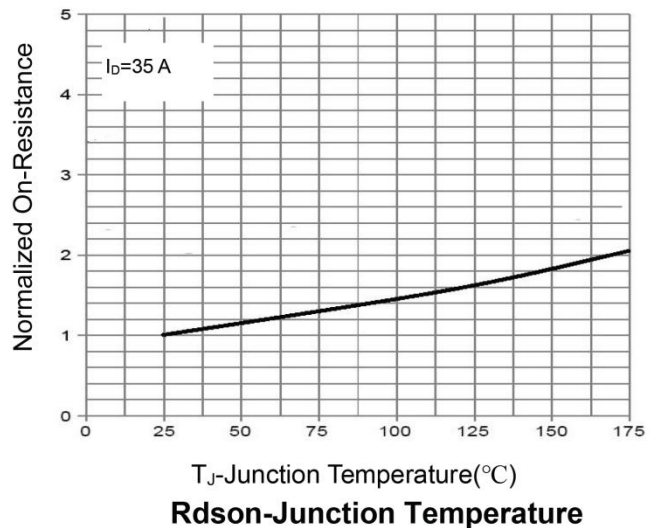
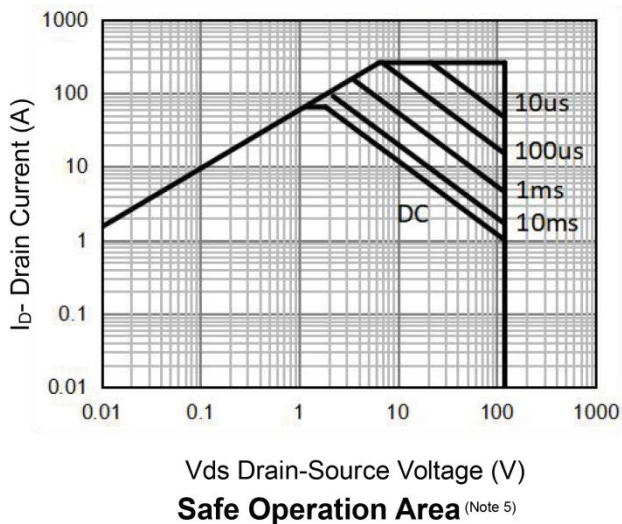
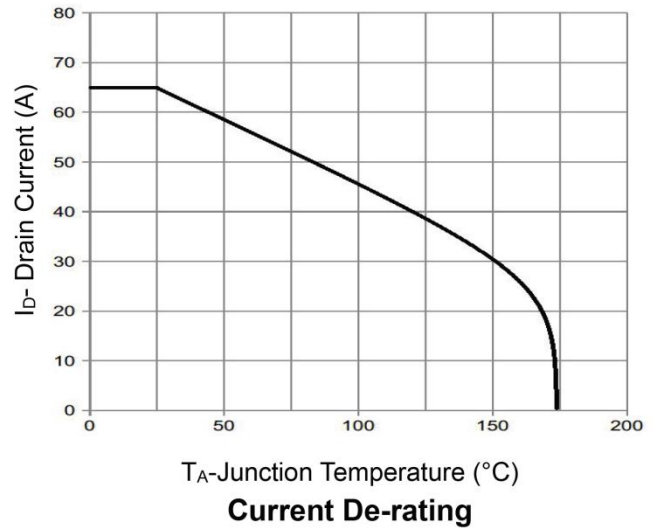
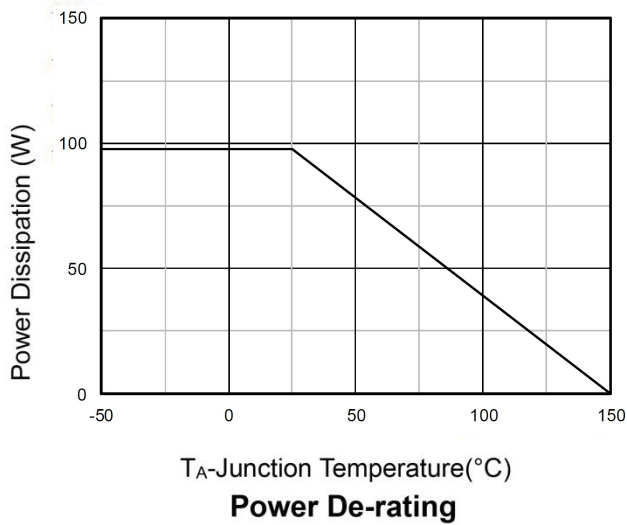
**Source- Drain Diode Forward**

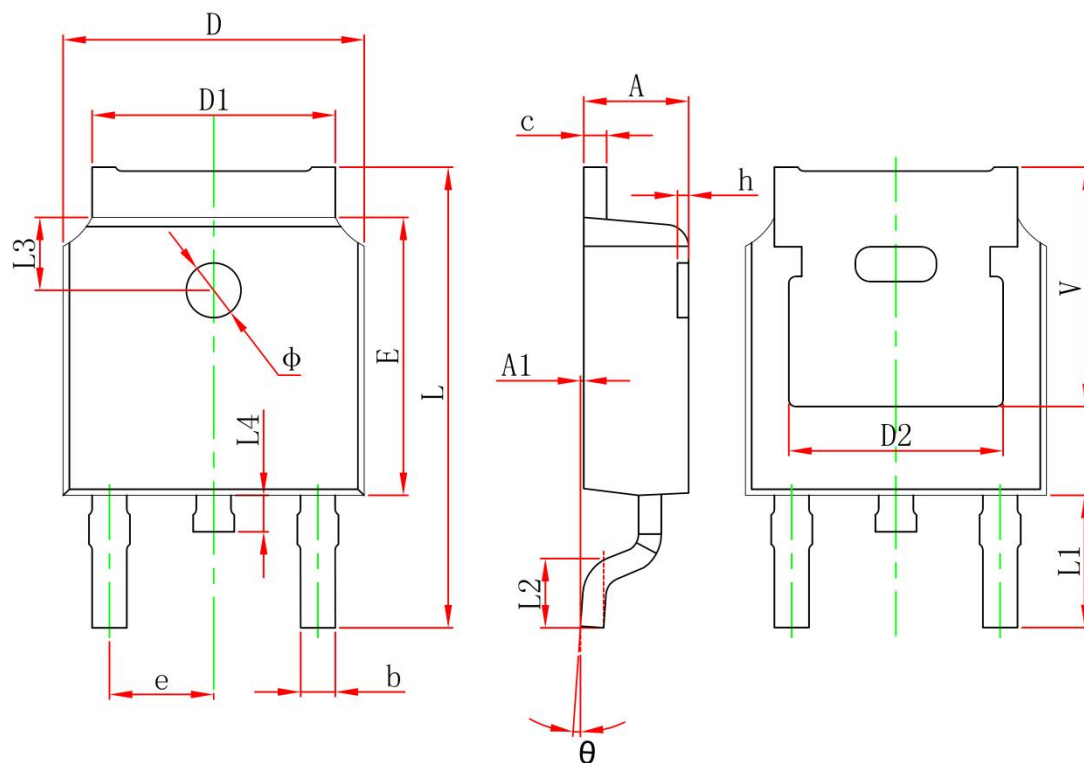


**Rdson- Drain Current**



**Capacitance vs Vds**



**TO-252 Package Information**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
$\phi$	1.100	1.300	0.043	0.051
$\theta$	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	