

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
120V	2.0mΩ@10V	270A



合肥矽普半导体

Siliup Semiconductor Technology Co., Ltd

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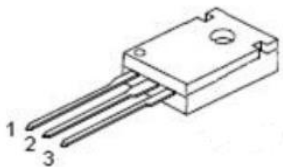
Feature

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

- Consumer electronic power supply
- Motor control Synchronous rectification
- Isolated DC/DC converter
- Inverters

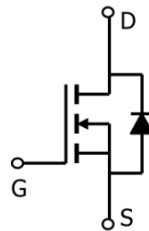
Applications

Package

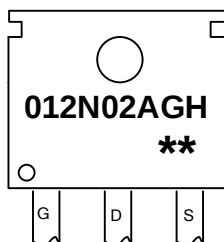


TO-247(1:G 2:D 3:S)

Circuit diagram



Marking



012N02AGH : Product code
** : Week code

Order Information

Device	Package	Unite/Tube
SP012N02AGHTF	TO-247	30

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}	± 20	V
Continuous drain current(Tc=25°C)	I_D	270	A
Pulsed drain current	I_{DM}	1080	A
Power dissipation(Tc=25°C)	P_D	346	W
Single pulsed avalanche energy ¹⁾	E_{AS}	2104	mJ
Thermal resistance, junction-case	$R_{\theta JC}$	0.36	°C/W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	°C

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

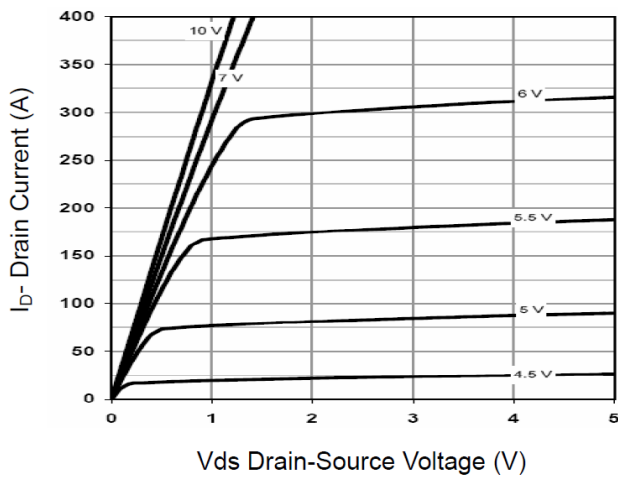
Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	B _V DSS	I _D = 250μA, V _{GS} = 0V	120	-	-	V
Drain Cut-Off Current	I _D SS	V _{DS} = 96V, V _{GS} = 0V	-	-	1	μA
Gate Leakage Current	I _G SS	V _{GS} = ±20V, V _{DS} = 0V	-	-	±0.1	
Gate Threshold Voltage	V _{GS} (th)	V _{DS} = V _{GS} , I _D = 250μA	2.5	3.3	4.5	V
Drain-Source ON Resistance	R _{DS} (ON)	V _{GS} = 10V, I _D = 50A	-	2.0	2.5	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 60V, V _{GS} = 0V, f = 1.0MHz	-	12700	-	pF
Output Capacitance	C _{oss}		-	870	-	
Reverse Transfer Capacitance	C _{rss}		-	48	-	
Switching Characteristics						
Total Gate Charge	Q _g	V _D S=60V , V _G S=10V , I _D =75A	-	213	-	nC
Gate-Source Charge	Q _{gs}		-	58	-	
Gate-Drain Charge	Q _{gd}		-	59	-	
Turn-On Delay Time	t _d (on)	V _{GS} = 10V, V _{DS} = 60V, I _D = 75A , R _G = 1.6Ω	-	24	-	ns
Rise Time	t _r		-	28	-	
Turn-Off Delay Time	t _d (off)		-	79	-	
Fall Time	t _f		-	31	-	
Drain-Source Body Diode Characteristics						
Source-Drain Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V	-	-	1.2	V

Note:

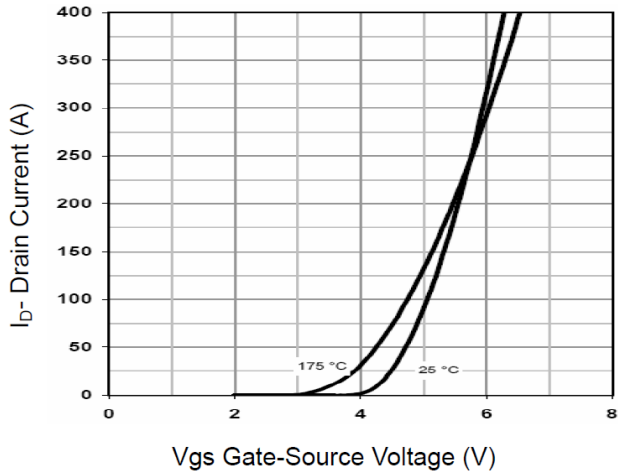
- E_{AS} is tested at starting $T_j = 25^\circ C$, $V_{DD}=50V, V_{GS} = 10V, L = 0.5mH, R_g=25m\Omega$;



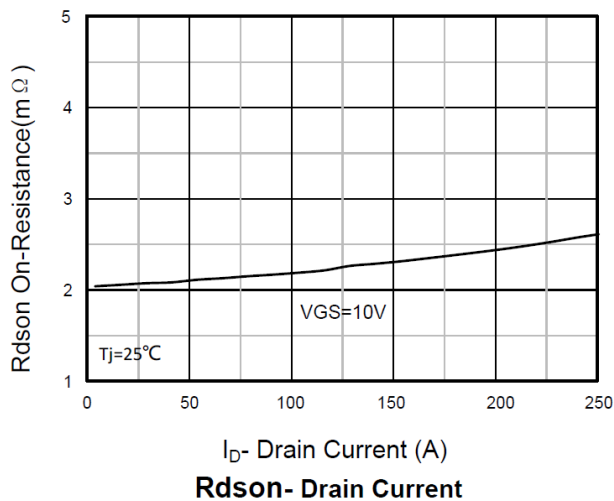
Typical Characteristics



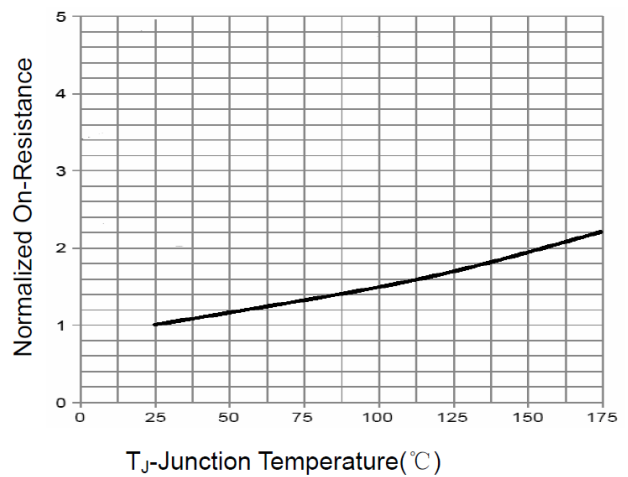
Output Characteristics



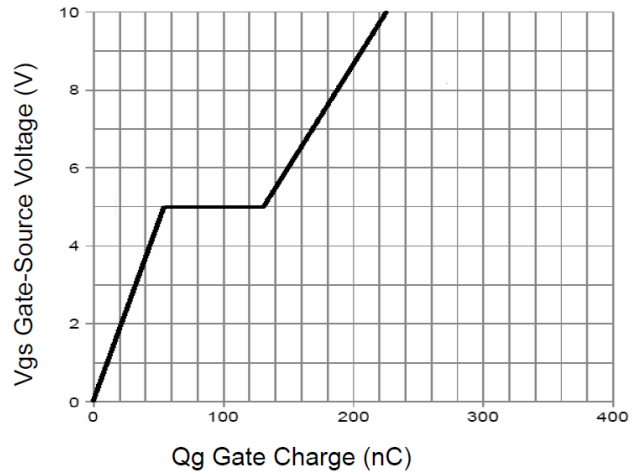
Transfer Characteristics



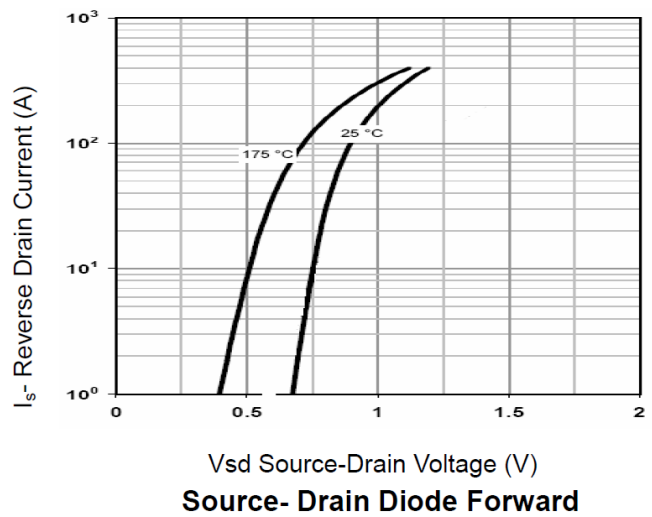
Rdson- Drain Current



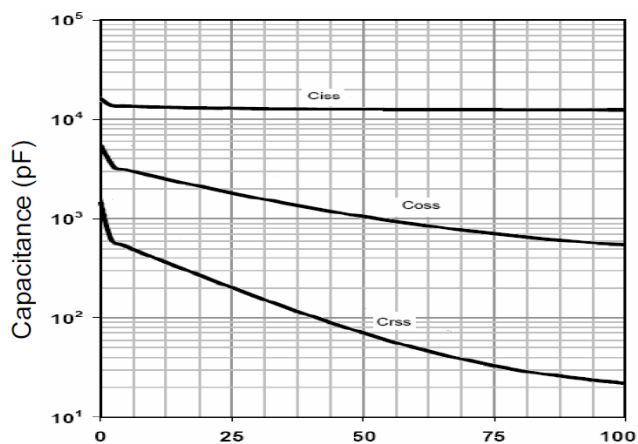
Rdson-Junction Temperature



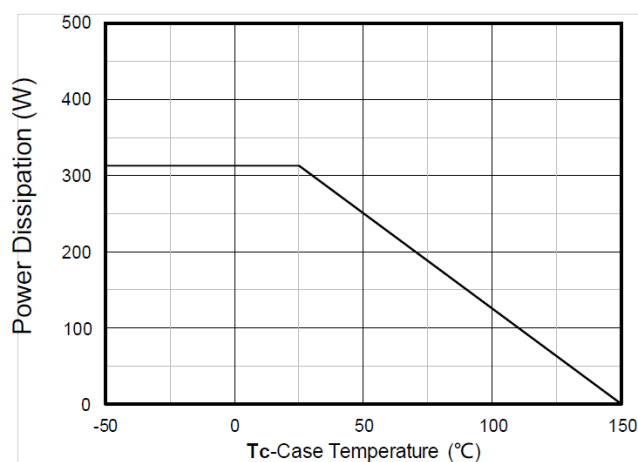
Gate Charge



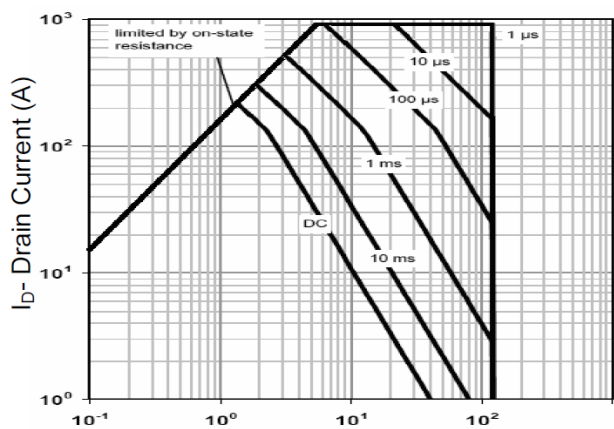
Source- Drain Diode Forward



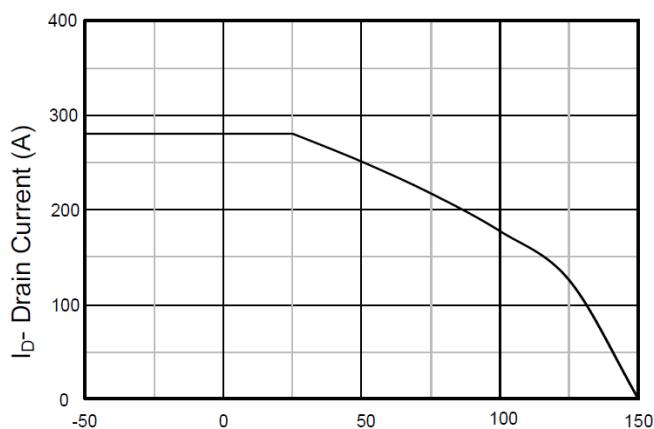
V_{ds} Drain-Source Voltage (V)
Capacitance vs V_{ds}



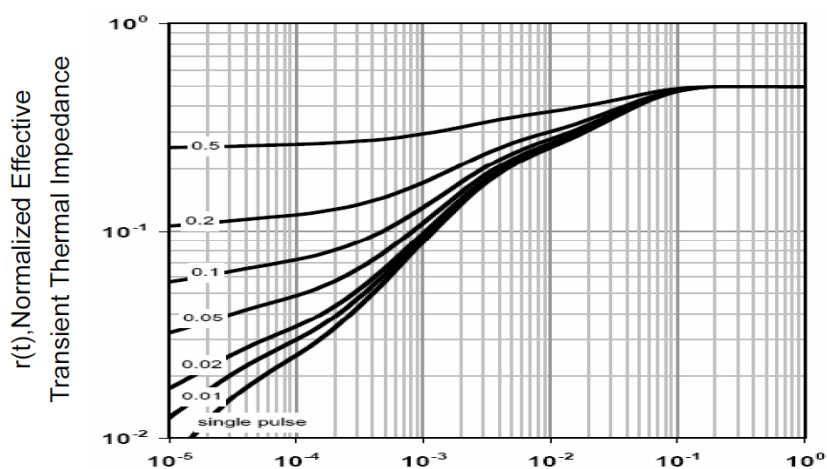
T_c-Case Temperature (°C)
T_j-Junction Temperature (°C)
Power De-rating



V_{ds} Drain-Source Voltage (V)
Safe Operation Area

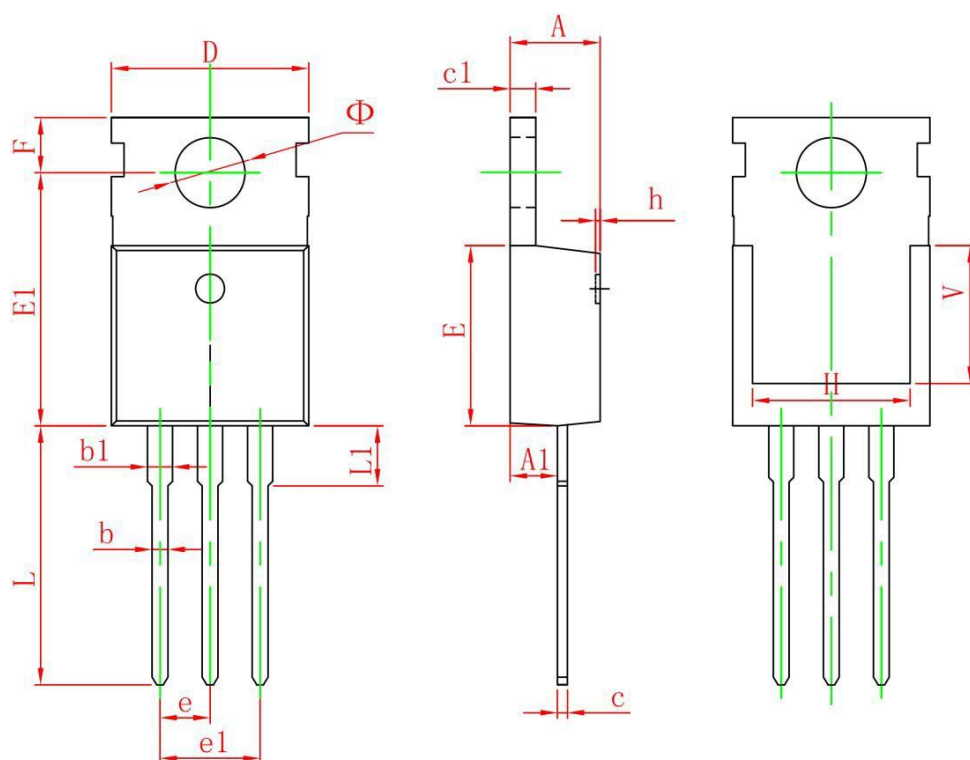


T_j-Junction Temperature (°C)
Current De-rating



Square Wave Pulse Duration(sec)
Normalized Maximum Transient Thermal Impedance

TO-220-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150