

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	6.5mΩ@10V	40A
	10mΩ@4.5V	



合肥矽普半导体

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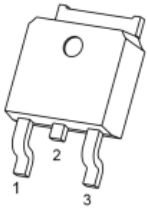
Feature

- Trench Power Technology
- Low RDS(ON)
- Low Gate Charge
- Optimized for Fast-switching Applications

Application

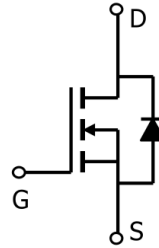
- High Speed Power Switching
- DC/DC Converters

Package

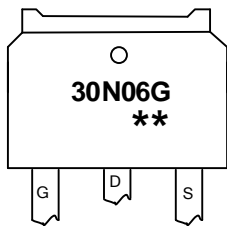


TO-252 (G:1 D:2 S:3)

Circuit diagram



Marking



30N06G : Product code
 ** : Week code.

Order Information

Device	Package	Unite/Tape
SP30N06GTH	TO-252-2L	2500

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Tc=25°C)	I_D	40	A
Pulsed Drain Current	I_{DM}	160	A
Single Pulse Avalanche Energy (note1)	E_{AS}	39	mJ
Power Dissipation (Tc=25°C)	P_D	34	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.67	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

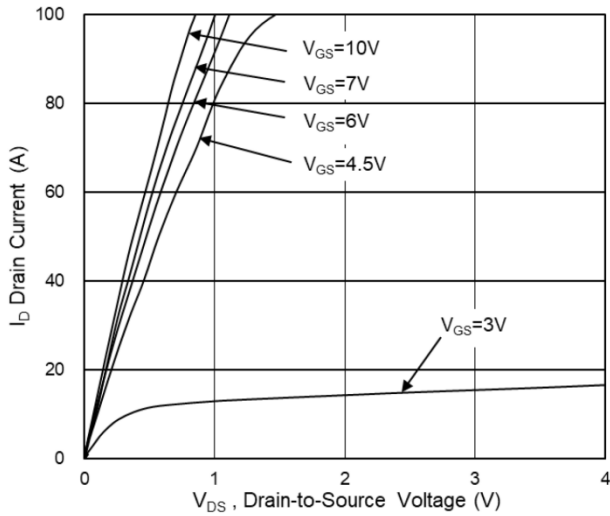
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.7	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	6.5	8.2	m Ω
		$V_{GS} = 4.5V, I_D = 20A$	--	10	13.5	
Forward Transconductance	g_{fs}	$V_{DS} = 5V, I_D = 45A$	--	60	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 40V, f = 1.0MHz$	--	823	--	pF
Output Capacitance	C_{oss}		--	345	--	
Reverse Transfer Capacitance	C_{rss}		--	15	--	
Total Gate Charge	Q_g	$V_{DD} = 15V, I_D = 20A, V_{GS} = 10V$	--	15	--	nC
Gate-Source Charge	Q_{gs}		--	2.2	--	
Gate-Drain Charge	Q_{gd}		--	3.1	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V, I_D = 20A, R_G = 0.8\Omega$	--	6.4	--	ns
Turn-on Rise Time	t_r		--	2.6	--	
Turn-off Delay Time	$t_{d(off)}$		--	16.5	--	
Turn-off Fall Time	t_f		--	2.7	--	
Drain-Source Body Diode Characteristics						
Body Diode Voltage	V_{SD}	$V_{GS} = 0V, I_S = 45A,$	--	--	1.2	V

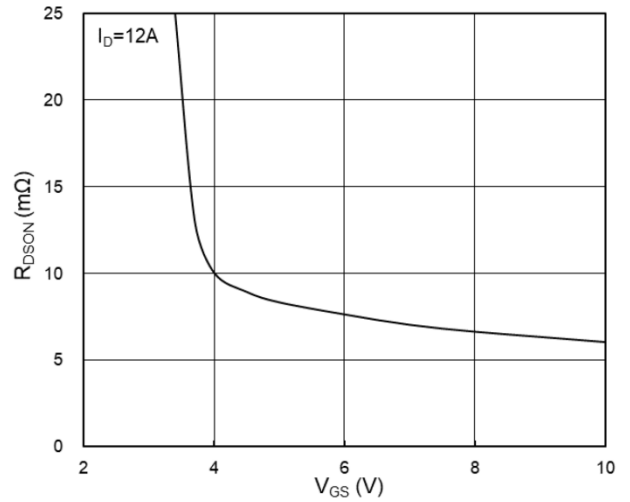
Notes:

1. EAS condition: $V_{DD} = 15V, V_G = 10V, L = 0.1mH, R_g = 25\Omega, T_J = 25^\circ C$.

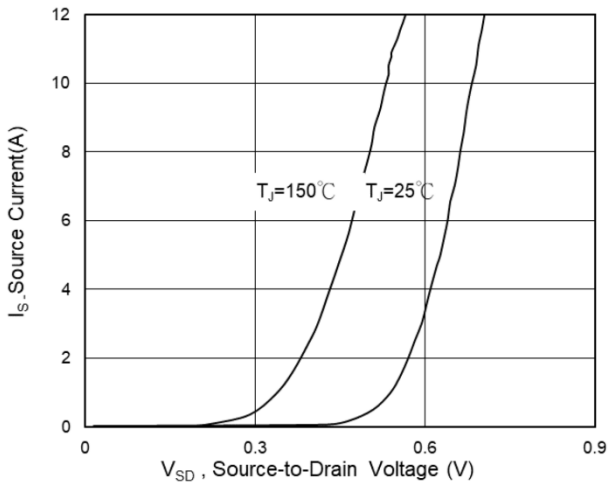
Typical Characteristics



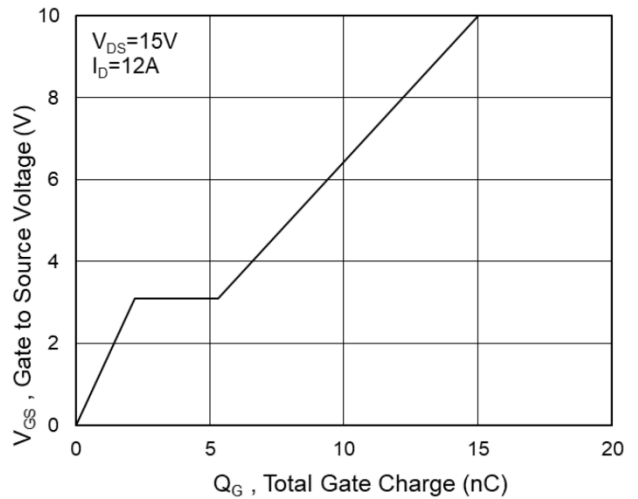
Output Characteristics



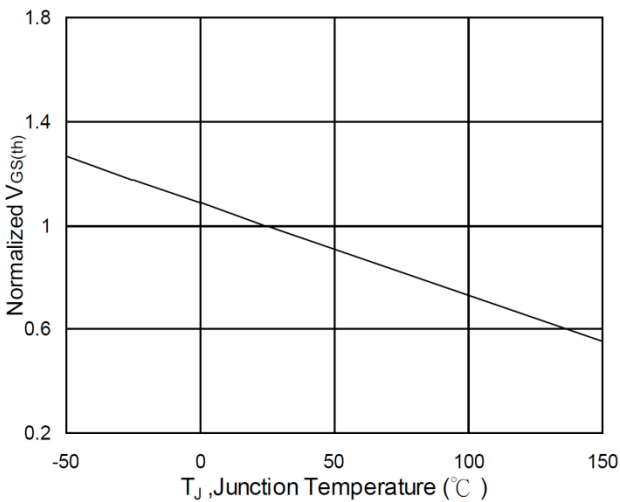
On-Resistance vs G-S Voltage



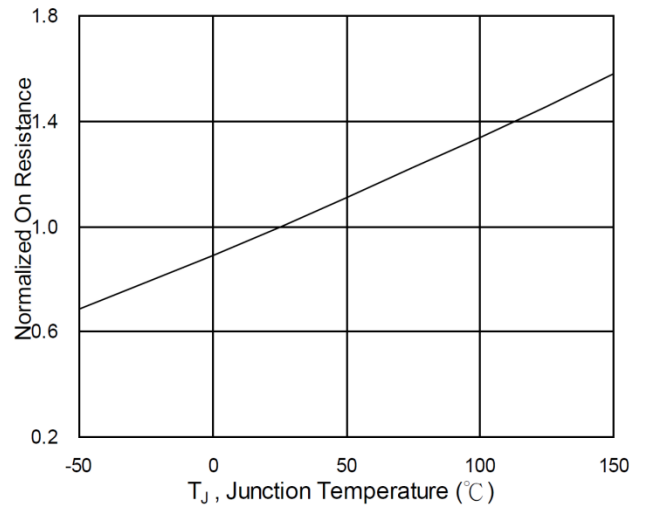
Source-Drain Diode Forward



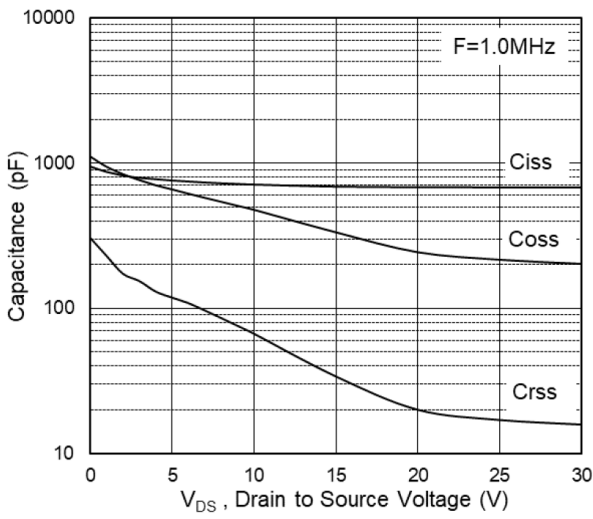
Gate-Charge Characteristics



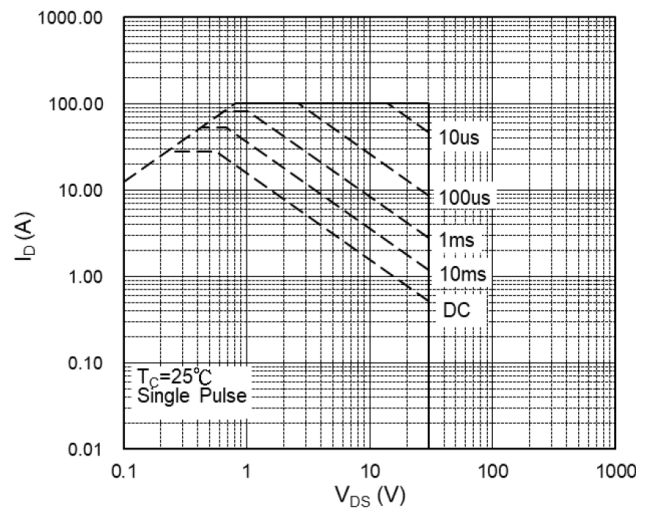
Normalized $V_{GS(th)}$ vs T_J



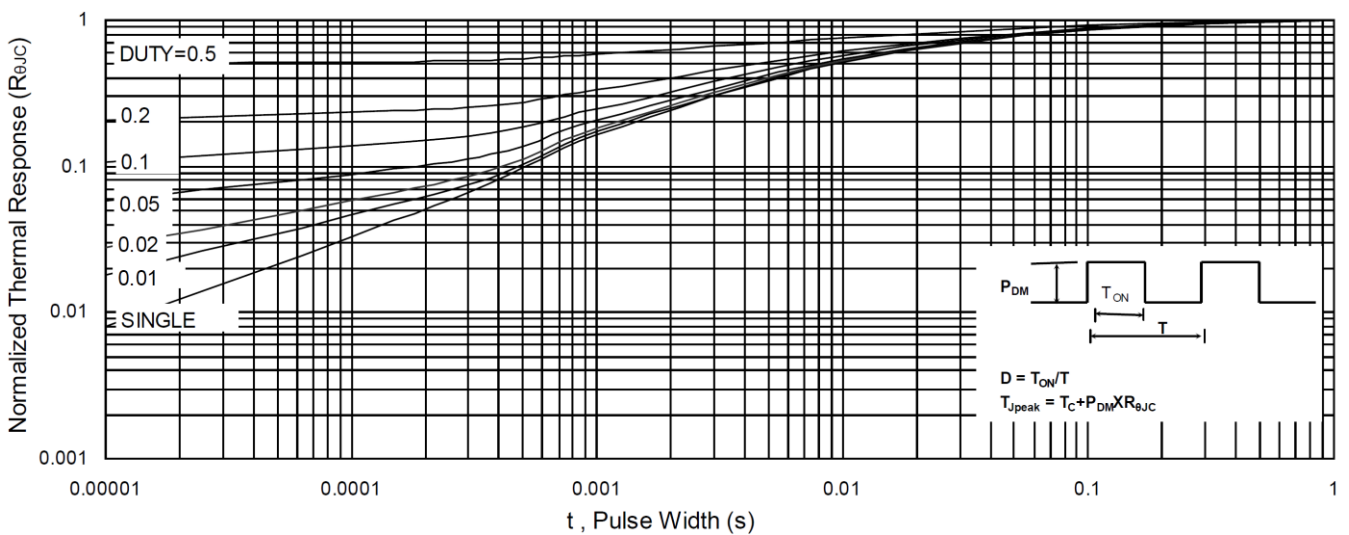
Normalized R_{DSON} vs T_J



Capacitance

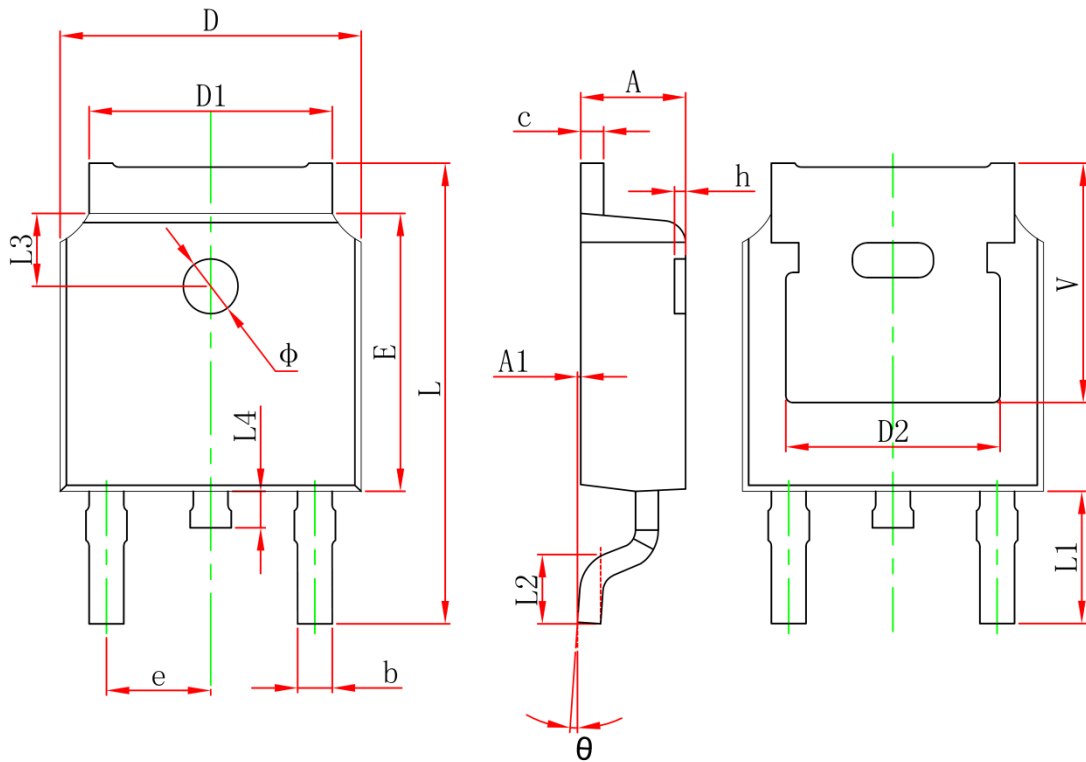


Safe Operating Area



Thermal Transient Impedance

TO-252 Package Outline Dimensions



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
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

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