



SPN1012

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN1012 is the N-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

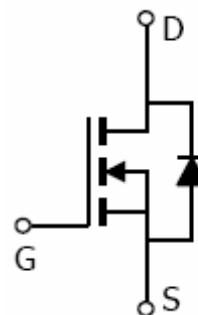
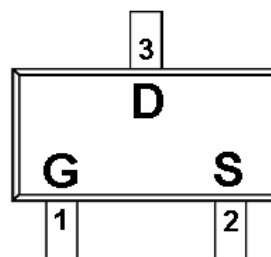
APPLICATIONS

- Drivers : Relays/Solenoids/Lamps/Hammers
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

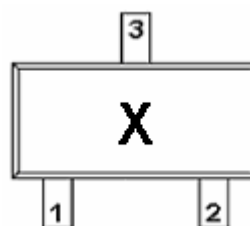
FEATURES

- ◆ N-Channel
20V/0.65A, $R_{DS(ON)}=380m\Omega@V_{GS}=4.5V$
20V/0.55A, $R_{DS(ON)}=450m\Omega@V_{GS}=2.5V$
20V/0.45A, $R_{DS(ON)}=800m\Omega@V_{GS}=1.8V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-523 (SC-89) package design

PIN CONFIGURATION(SOT-523 / SC-89)



PART MARKING





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PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN1012S52RG	SOT-523	X
SPN1012S52RGB	SOT-523	X

※ SPN1012S52RG : Tape Reel ; Pb – Free
SPN1012S52RGB: Tape Reel ; Pb –Free, Halogen –Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	20	V
Gate –Source Voltage	V _{GSS}	±12	V
Continuous Drain Current(T _J =150°C)	I _D	0.65	A
		0.45	
Pulsed Drain Current	I _{DM}	1.0	A
Continuous Source Current(Diode Conduction)	I _S	0.3	A
Power Dissipation	P _D	0.27	W
		0.16	
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C



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ELECTRICAL CHARACTERISTICS

(T_A=25°C Unless otherwise noted)

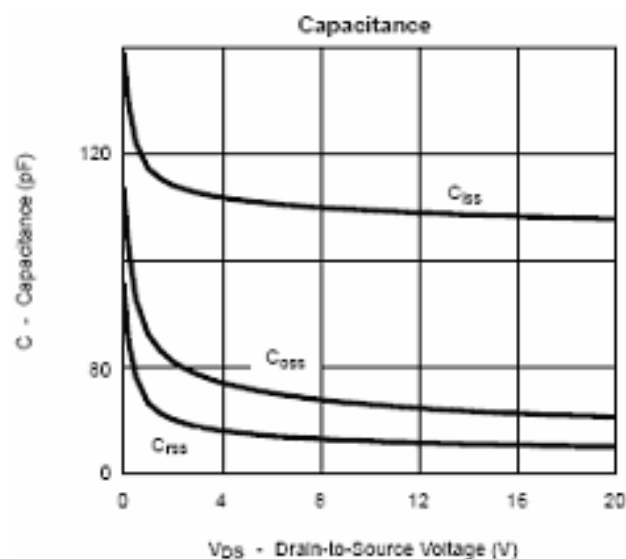
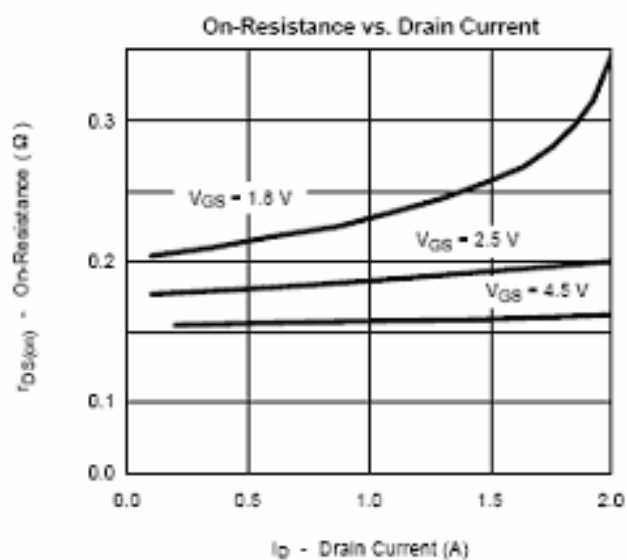
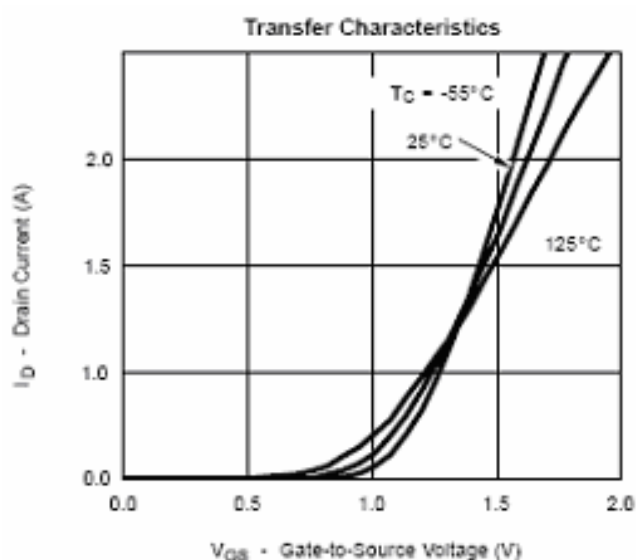
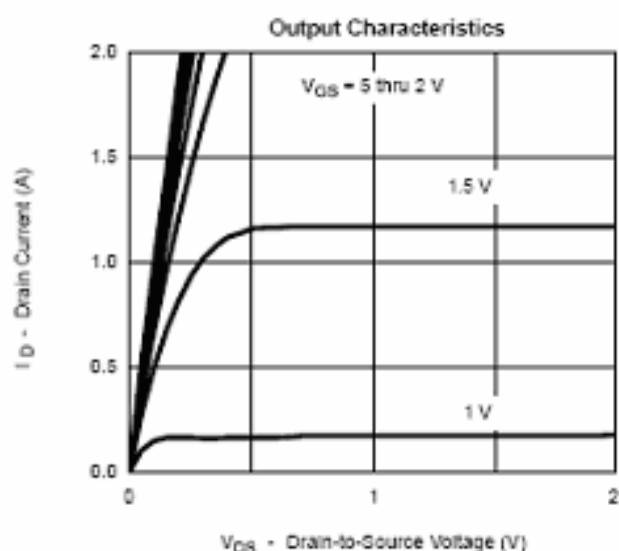
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = 250uA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	0.35		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} =0V			1	uA
		V _{DS} = 20V, V _{GS} =0V T _J =55°C			5	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V, V _{GS} =5V	0.7			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =0.65A		0.26	0.38	Ω
		V _{GS} =2.5V, I _D =0.55A		0.32	0.45	
		V _{GS} =1.8V, I _D =0.45A		0.42	0.80	
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =0.4A		1.0		S
Diode Forward Voltage	V _{SD}	I _S =0.15A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =0.6A		1.2	1.5	nC
Gate-Source Charge	Q _{gs}			0.2		
Gate-Drain Charge	Q _{gd}			0.3		
Turn-On Time	t _{d(on)}	V _{DD} =10V, R _L =10Ω , I _D =0.5A V _{GEN} =4.5V , R _G =6Ω		5	10	ns
	t _r			8	15	
Turn-Off Time	t _{d(off)}			10	18	
	t _f			1.2	2.8	



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TYPICAL CHARACTERISTICS

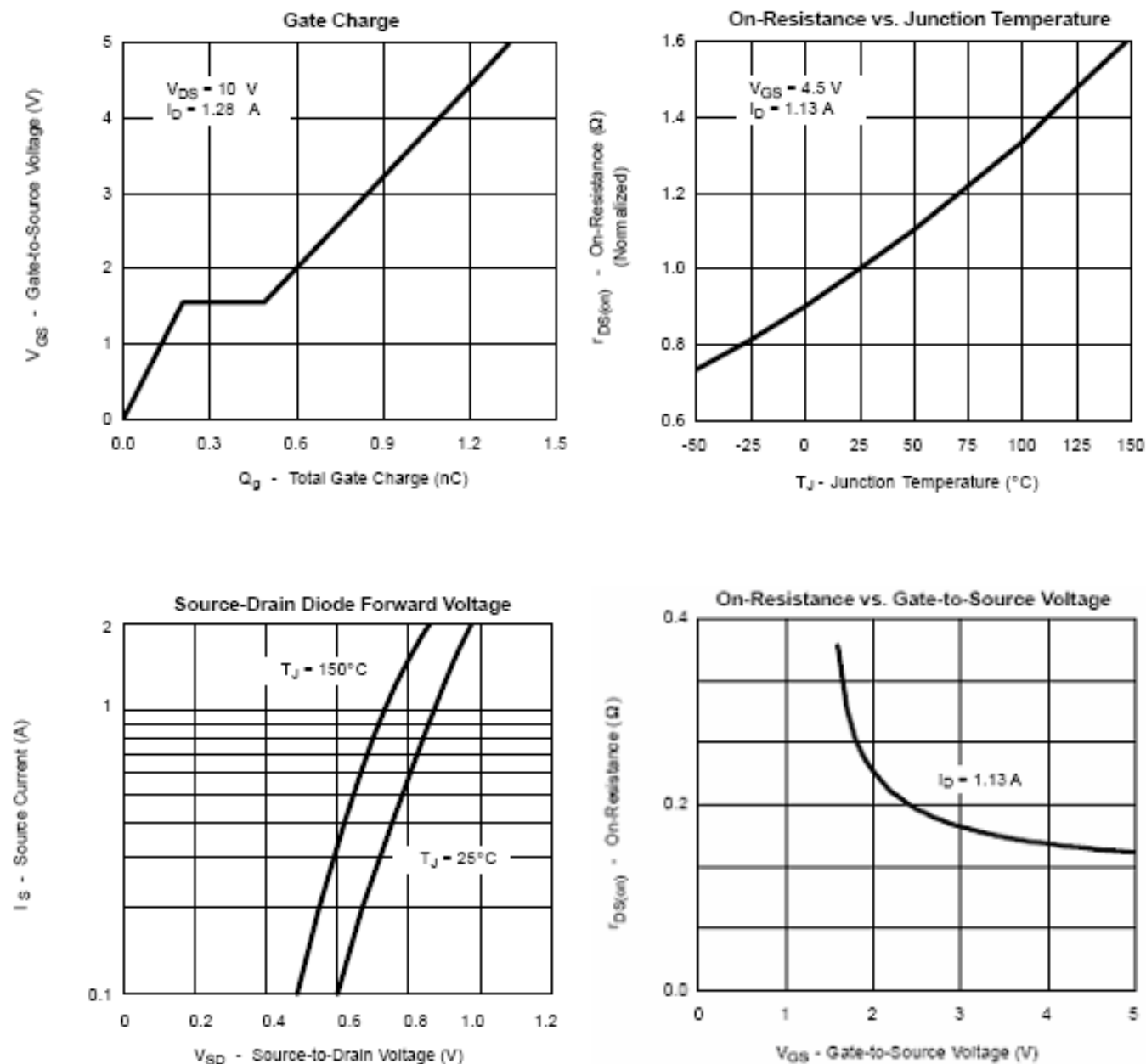




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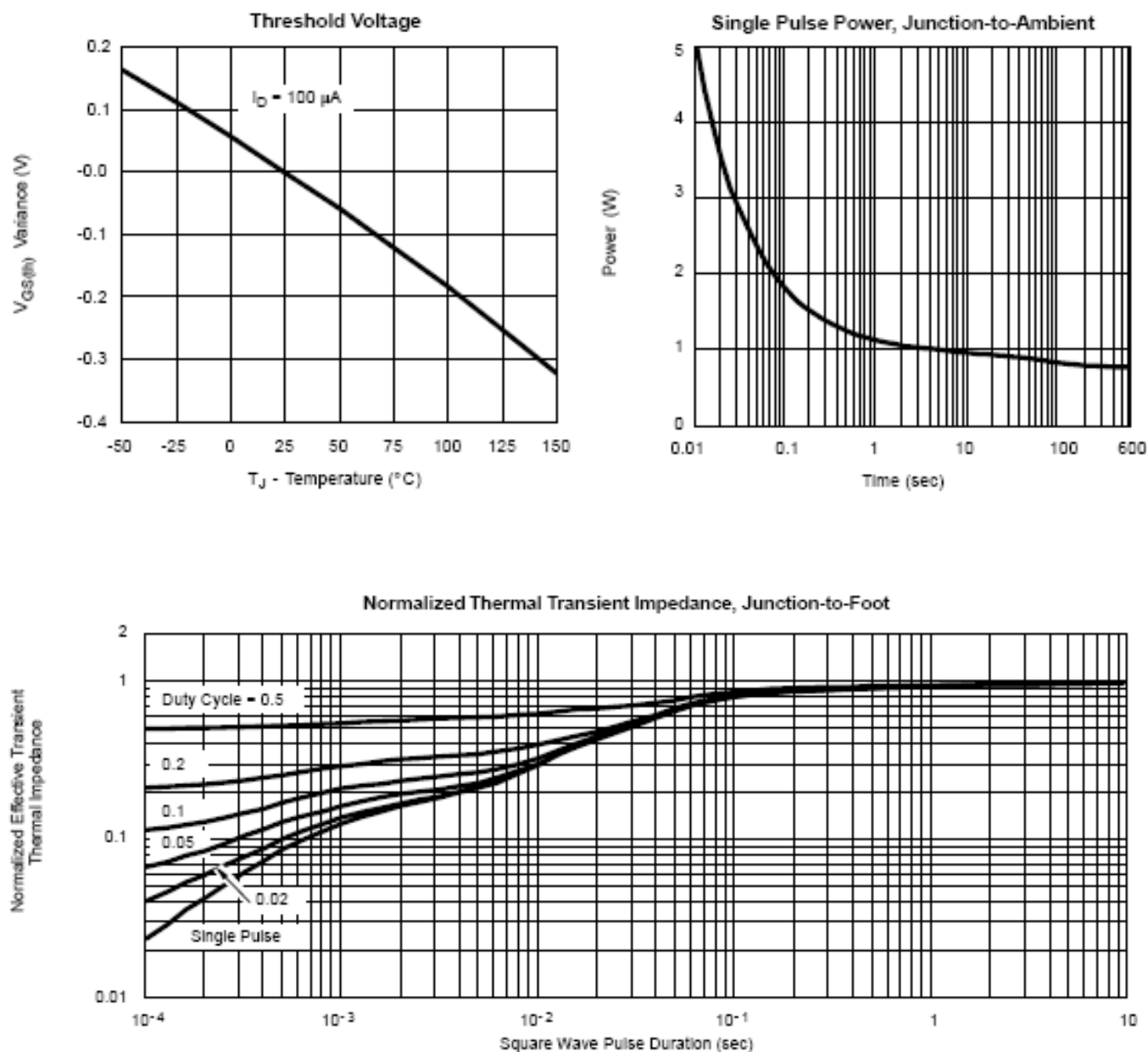




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TYPICAL CHARACTERISTICS

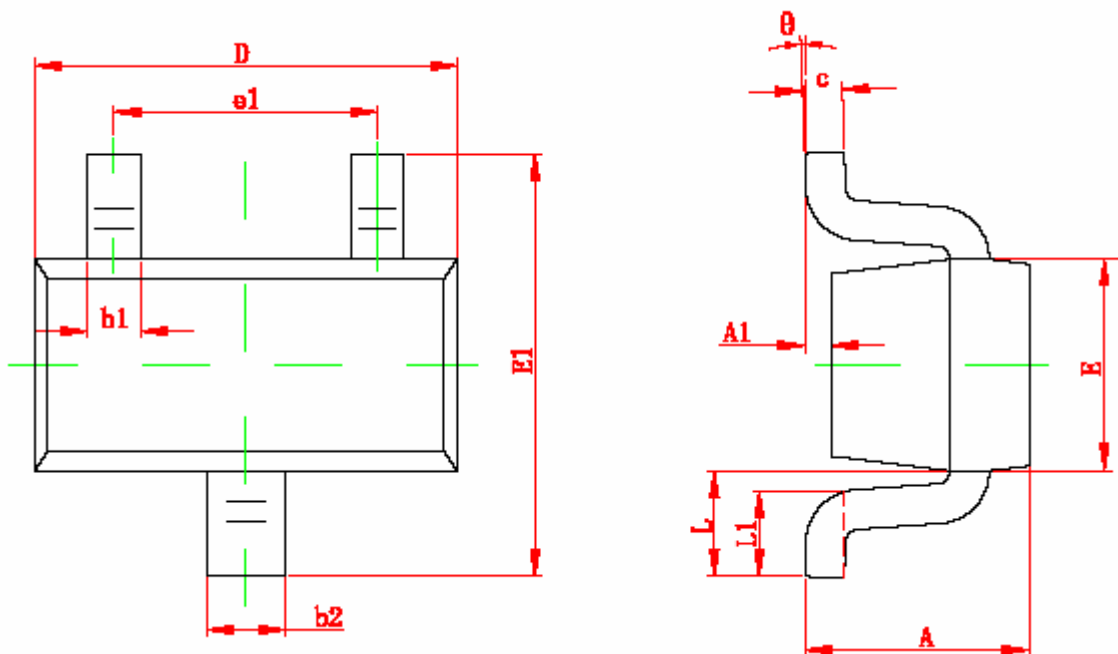




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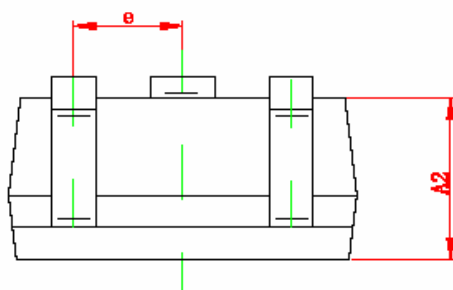
SOT-523 PACKAGE OUTLINE





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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.325	0.010	0.013
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.750	0.850	0.030	0.033
E1	1.450	1.750	0.057	0.069
e	0.500 TYP		0.020 TYP	
e1	0.900	1.100	0.035	0.043
L	0.550 REF		0.022 REF	
L1	0.280	0.440	0.011	0.017
θ	0°	4°	0°	4°



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SYNC Power Corporation

9F-5, No.3-2, Park Street

NanKang District (NKSP), Taipei, Taiwan 115

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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