SPP1413
P-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPP1413 is the P-Channel logic 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.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching , and low in-line power loss are needed in a very small outline surface mount package.

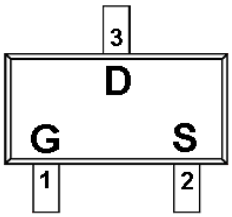
APPLICATIONS

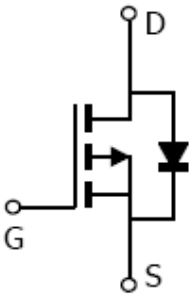
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES

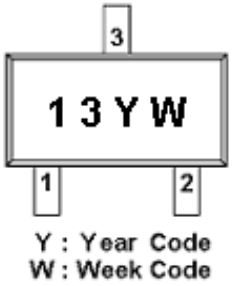
- -20V/-2.4A,$R_{DS(ON)}$=130mΩ@V_{GS}=-10V
- -20V/-2.9A,$R_{DS(ON)}$=150mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low R_{DS} (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-323 (SC–70) package design

PIN CONFIGURATION (SOT-323 ; SC-70)





PART MARKING



Y : Year Code
W : Week Code

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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
SPP1413S32RGB	SOT-323	13

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)
※ SPP1413S32RGB : Tape Reel ; Pb – Free; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ 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℃)	T_A=25℃	I_D	-2.9	A
	T_A=70℃		-2.0	
Pulsed Drain Current		I_{DM}	-8	A
Continuous Source Current(Diode Conduction)		I_S	-1.4	A
Power Dissipation	T_A=25℃	P_D	0.33	W
	T_A=70℃		0.21	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	105	℃/W

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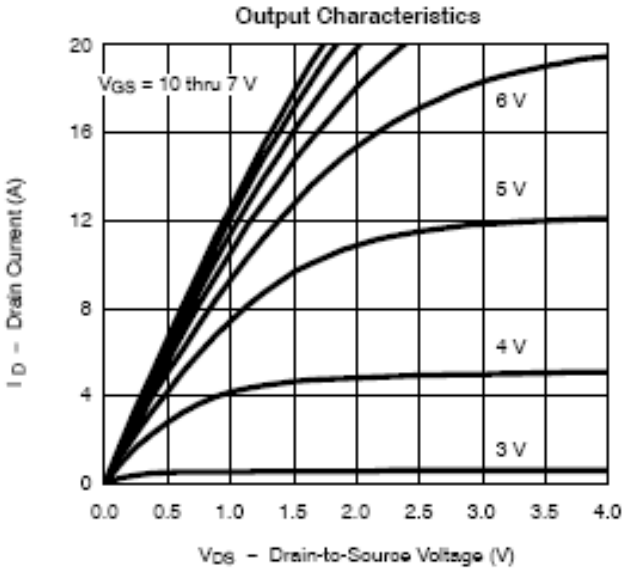
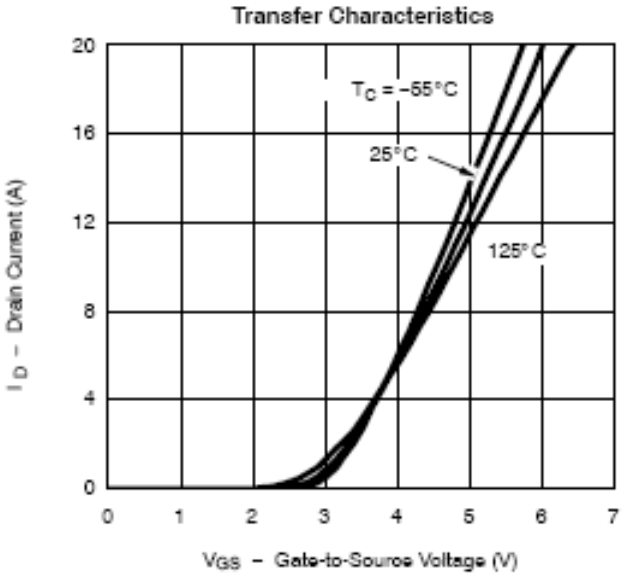
ELECTRICAL CHARACTERISTICS

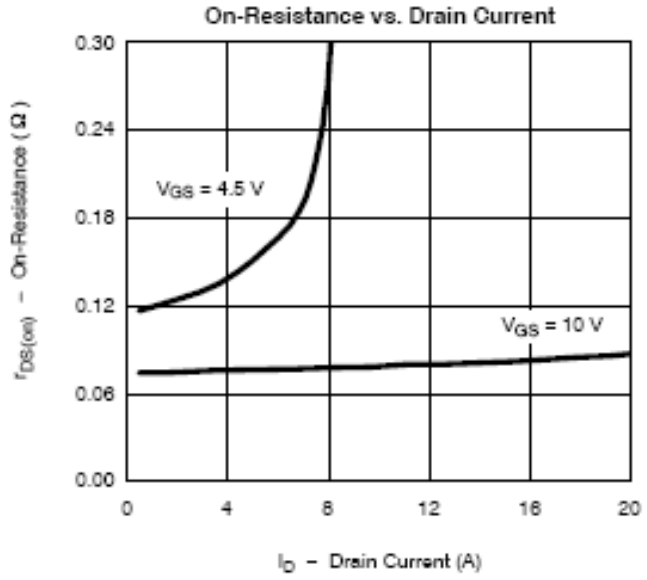
(T_A=25℃ Unless otherwise noted)

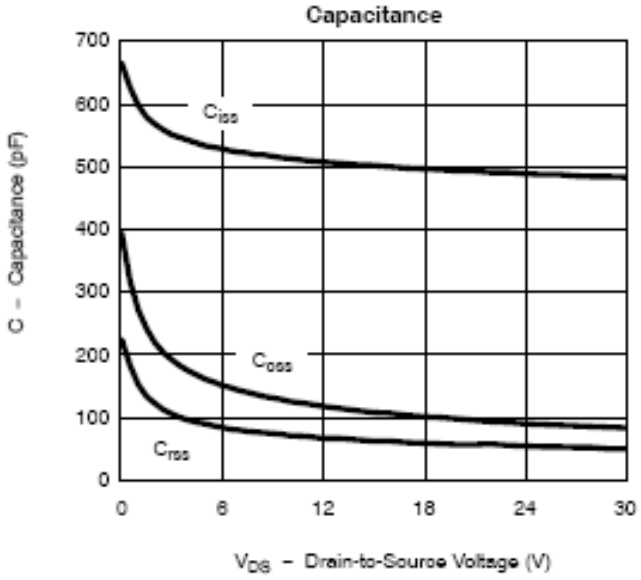
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.5		-1.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	uA
		V_{DS}=-20V,V_{GS}=0V T_J=85℃			-5	
On-State Drain Current	$I_{D(on)}$	V_{DS}= -5V,V_{GS} =-4.5V	-4			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-2.4A		0.090	0.130	Ω
		V_{GS}=-4.5V,I_D=-2.9A		0.125	0.150	
Forward Transconductance	gfs	V_{DS}=-10V,I_D=-2.9A		6		S
Diode Forward Voltage	V_{SD}	I_S=-1.4A,V_{GS} =0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-10V,V_{GS}=-10V I_D=-2.4A		5.8	10	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V f=1MHz		226		pF
Output Capacitance	C_{oss}			87		
Reverse Transfer Capacitance	C_{rss}			19		
Turn-On Time	$t_{d(on)}$	V_{DD}=-10V,R_L=15Ω I_D=-1.0A,V_{GEN}=-10V R_G=6Ω		9	20	nS
	t_r			9	20	
Turn-Off Time	$t_{d(off)}$			18	35	
	t_f			6	20	

TYPICAL CHARACTERISTICS



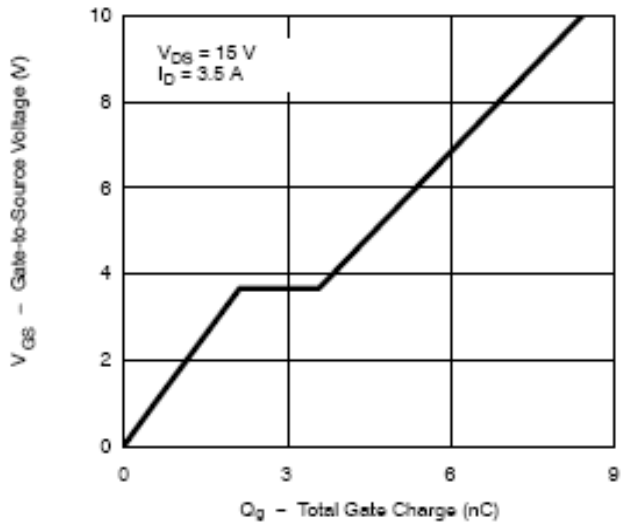




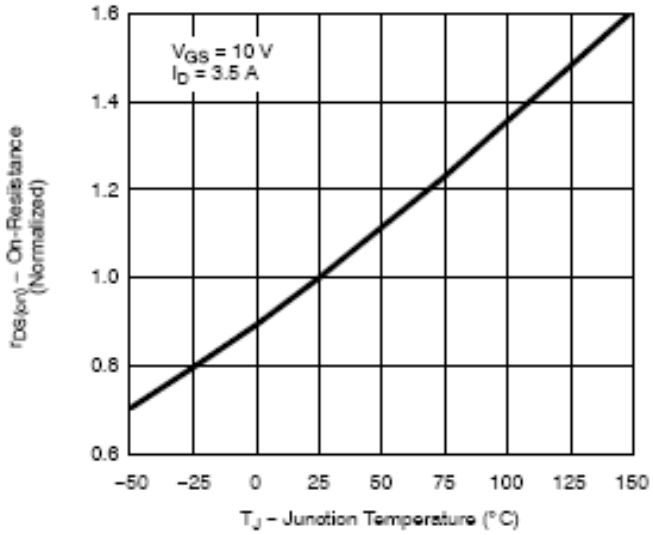


TYPICAL CHARACTERISTICS

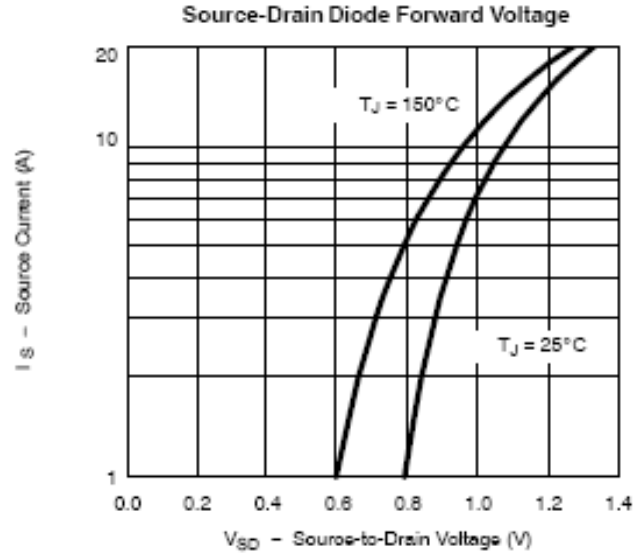
Gate Charge



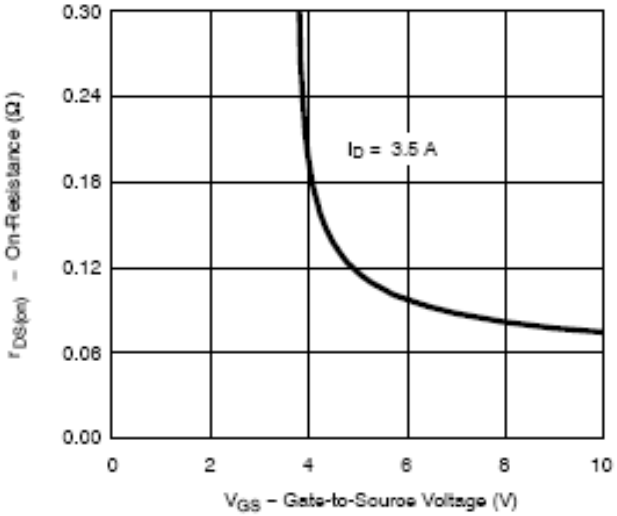
On-Resistance vs. Junction Temperature



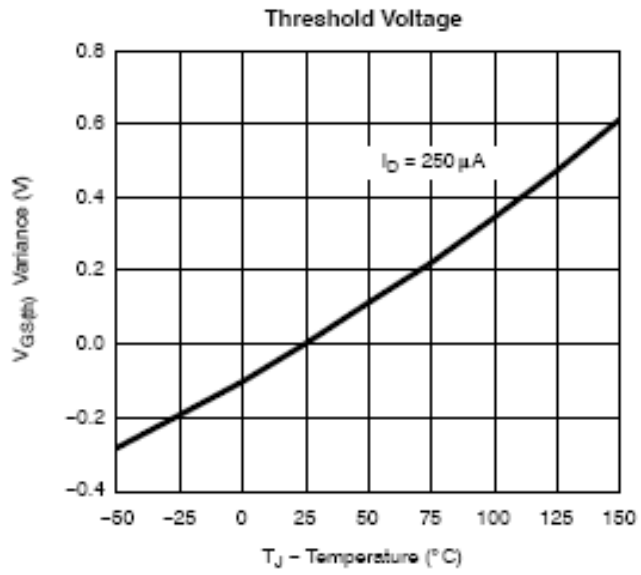
Source-Drain Diode Forward Voltage

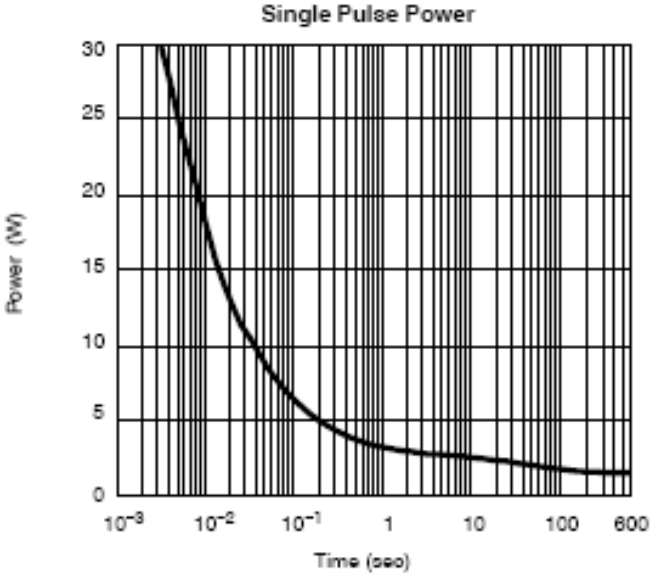


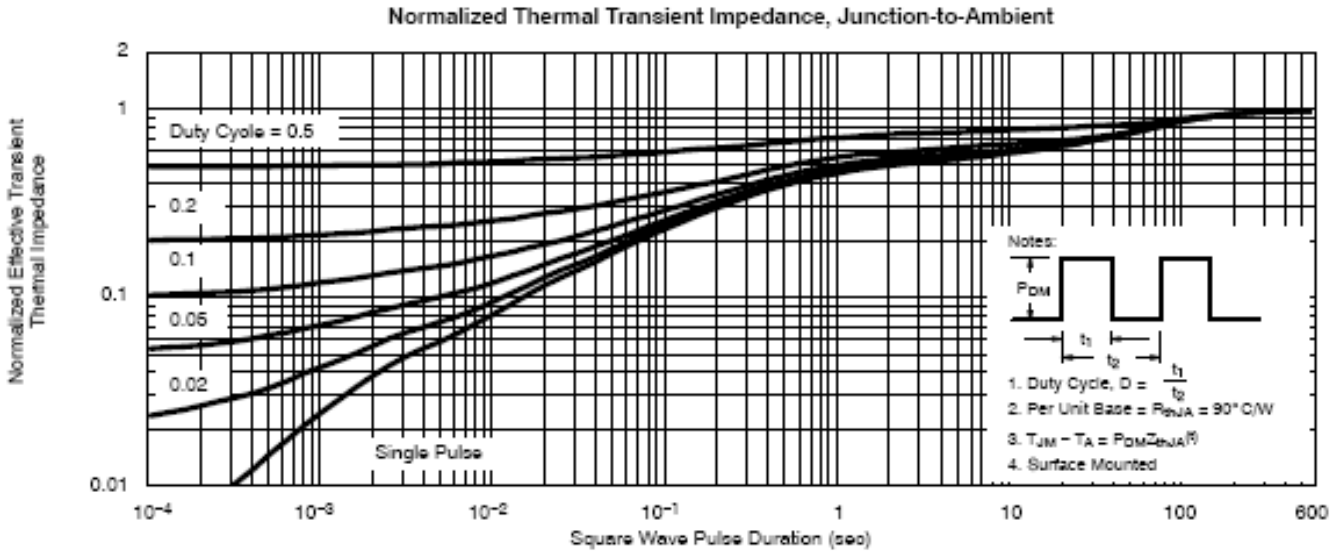
On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS







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