SPN6242
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN6242 is the N-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, and low in-line power loss are needed in a very small outline surface mount package.

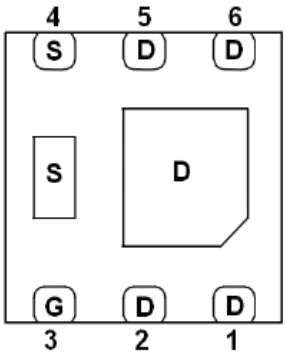
APPLICATIONS

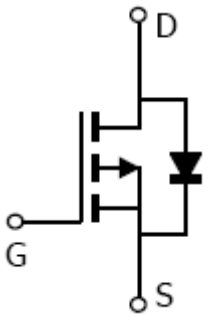
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES

- 20V/3.3A,$R_{DS(ON)}$=19mΩ@V_{GS}=4.5V
- 20V/2.8A,$R_{DS(ON)}$=24mΩ@V_{GS}=2.5V
- 20V/2.3A,$R_{DS(ON)}$=32mΩ@V_{GS}=1.8V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- UDFN2x2-6L package design

PIN CONFIGURATION(UDFN2x2-6L)





PART MARKING

Y : Year Code
W: Week Code

SPN6242
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN6242UDN6RGB	UDFN2x2-6L	6242YW

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)
※ SPN6242UDN6RGB : 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}	±10	V
Continuous Drain Current(T_J=150℃)	T_C=25℃	I_D	6.7	A
	T_C=100℃		4.2	
Pulsed Drain Current (*1)		I_{DM}	26.8	A
Continuous Source Current(Diode Conduction)		I_S	6.7	A
Power Dissipation	T_A=25℃	P_D	1.9	W
	T_A=70℃		1.2	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	65	℃/W

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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	0.3	0.6	0.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±10V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V,V_{GS}=0V, T_J=25°C			1	uA
		V_{DS}=16V,V_{GS}=0V T_J=125°C			10	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=3.3A		15	19	mΩ
		V_{GS}=2.5V,I_D=2.8A		18	24	
		V_{GS}=1.8V,I_D=2.3A		23	32	
Forward Transconductance	gfs	V_{DS}=10V,I_D=4A		9.5		S
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V, T_J=25°C			1	V
Dynamic						
Total Gate Charge (*2,3)	Q_g	V_{DS}=10V,V_{GS}=4.5V I_D=4A		5.8	8	nC
Gate-Source Charge (*2,3)	Q_{gs}			0.6	1	
Gate-Drain Charge (*2,3)	Q_{gd}			2	4	
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V f=1MHz		600	870	pF
Output Capacitance	C_{oss}			70	100	
Reverse Transfer Capacitance	C_{rss}			45	65	
Turn-On Time (*2,3)	$t_{d(on)}$	V_{DD}=10V,I_D=1A,V_{GEN}=4.5V R_G=25Ω		5.0	9	nS
	t_r			14.4	27	
Turn-Off Time (*2,3)	$t_{d(off)}$			30	55	
	t_f			9.2	17	

Note :
1.Repetitive Rating : Pulsed width limited by maximum junction temperature.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.

3.Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS

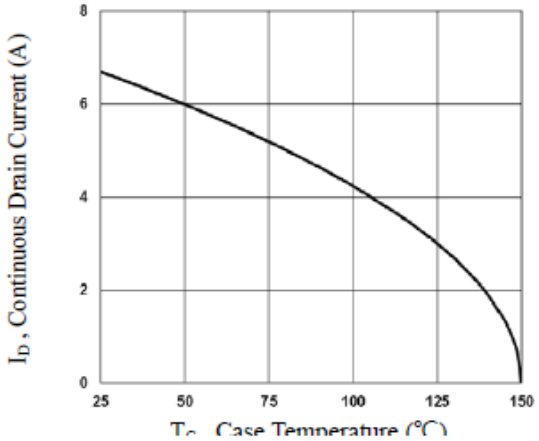


Fig.1 Continuous Drain Current vs. T_C

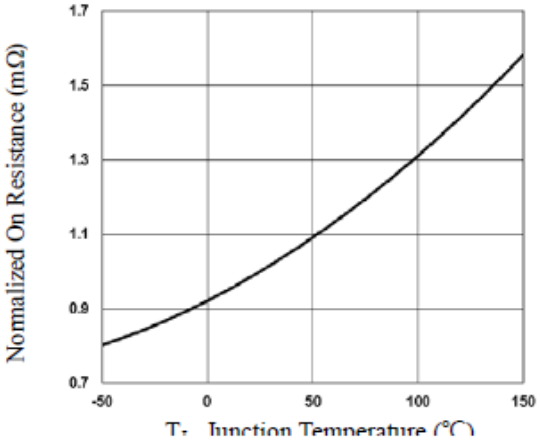


Fig.2 Normalized RDSON vs. T_J

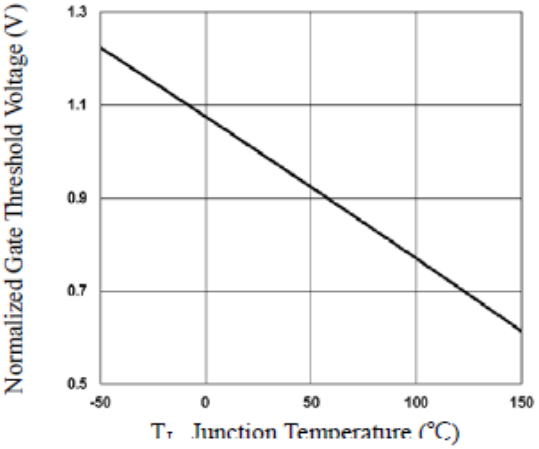


Fig.3 Normalized V_{th} vs. T_J

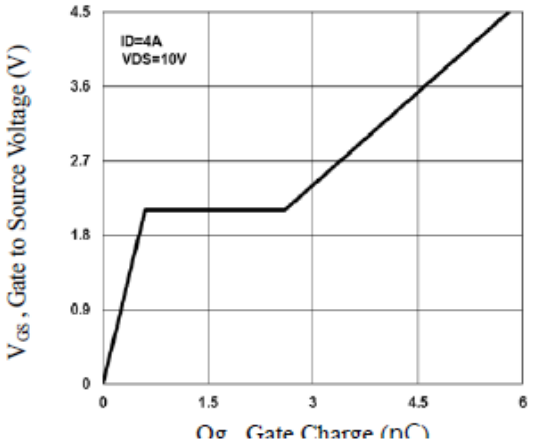


Fig.4 Gate Charge Waveform

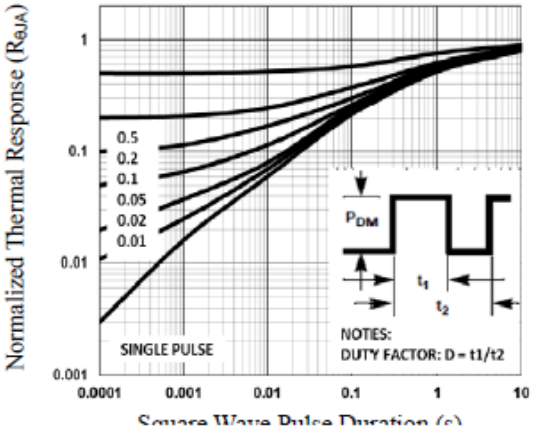


Fig.5 Normalized Transient Impedance

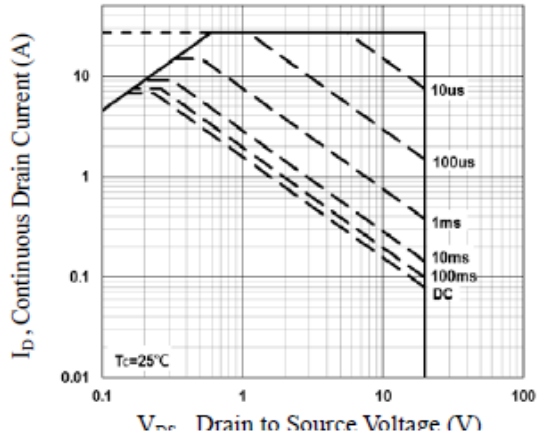


Fig.6 Maximum Safe Operation Area

TYPICAL CHARACTERISTICS

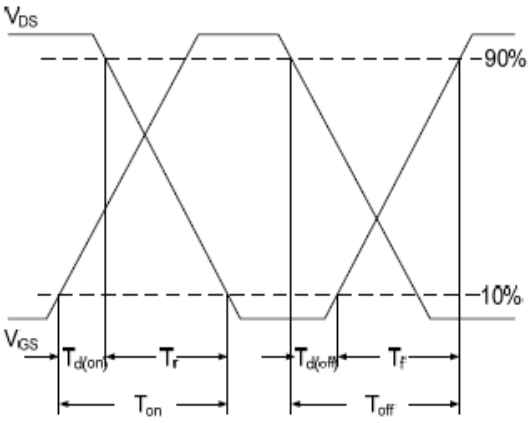


Fig.7 Switching Time Waveform

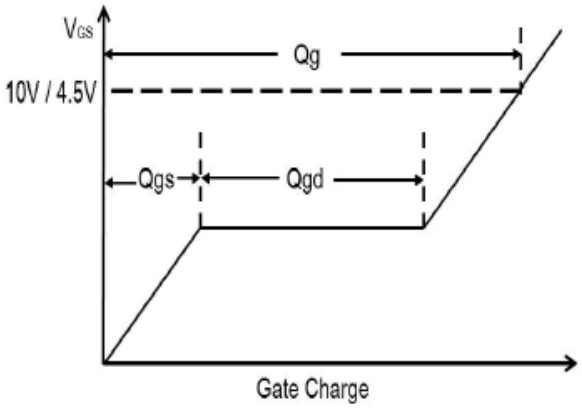
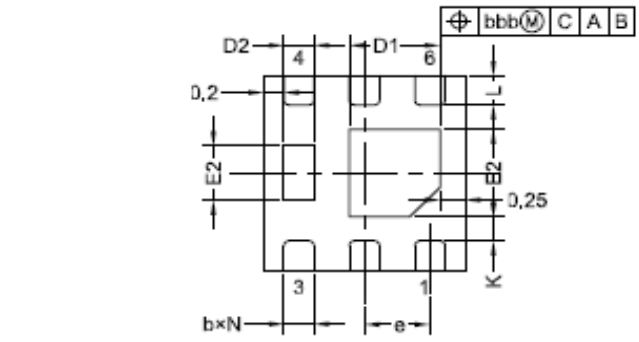
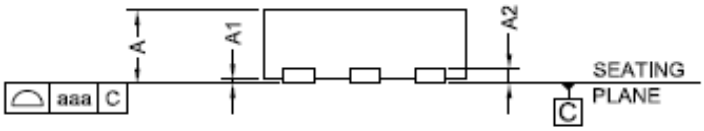


Fig.8 Gate Charge Waveform

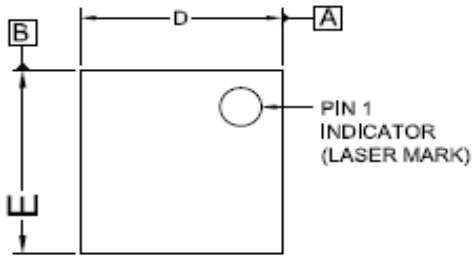
UDFN2X2-6L PACKAGE OUTLINE



BOTTOM VIEW



SIDE VIEW



TOP VIEW

SYMBOL	MIN	TYP	MAX
A	0,50	0.55	0,60
A1	0,00	0.02	0,05
A2		0.152REF.	
b	0,25	0.30	0,35
D	1,95	2.00	2,05
D1	0,80	0.90	1,00
D2	0.25	0.30	0.35
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
E2	0.46	0.56	0.66
e		0.65BSC	
L	0.25	0.30	0.35
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	

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