



SPN5454

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN5454 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. The SPN5454 has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

FEATURES

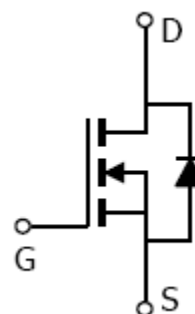
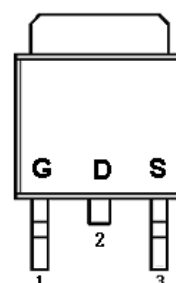
- ◆ 40V/10A, $R_{DS(ON)}=18m\Omega@V_{GS}=10V$
- ◆ 40V/ 8A, $R_{DS(ON)}=20m\Omega@V_{GS}=4.5V$
- ◆ 40V/ 6A, $R_{DS(ON)}=28m\Omega@V_{GS}=2.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-252-2L package design

APPLICATIONS

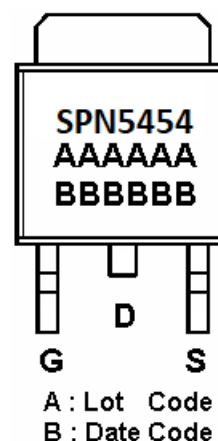
- Power Management in Note book
- Powered System
- DC/DC Converter
- Load Switch

PIN CONFIGURATION

TO-252-2L



PART MARKING





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PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN5454T252RGB	TO-252-2L	SPN5454

※ SPN5454T252RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter			Symbol	Typical	Unit
Drain-Source Voltage			V _{DSS}	40	V
Gate –Source Voltage			V _{GSS}	±20	V
Continuous Drain Current	T _A =25°C		I _D	20	A
	T _A =100°C			12	
Pulsed Drain Current			I _{DM}	40	A
Avalanche Current			I _{AS}	25	A
Power Dissipation	T _A =25°C	TO-252-2L	P _D	40	W
		TO-251		55	
Avalanche Energy with Single Pulse (T _J =25°C , L = 0.14mH , I _{AS} = 30A , V _{DD} = 20V.)			E _{AS}	63	mJ
Operating Junction Temperature			T _J	-55/150	°C
Storage Temperature Range			T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient			R _{θJA}	100	°C/W



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ELECTRICAL CHARACTERISTICS

(T_A=25°C Unless otherwise noted)

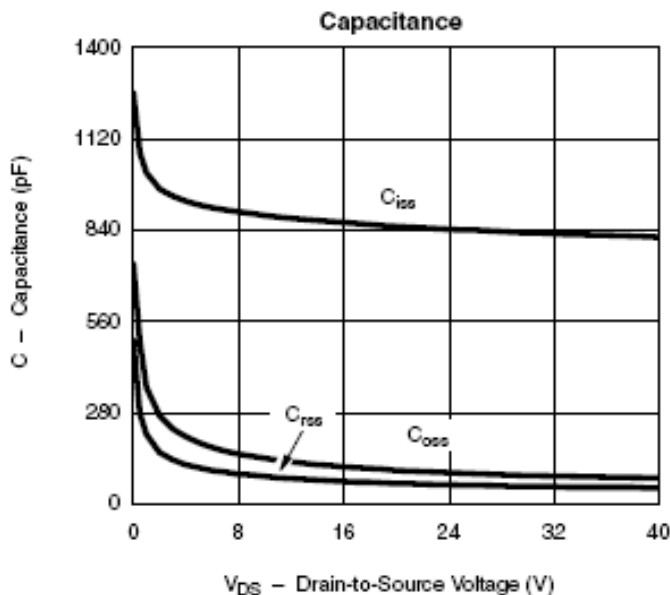
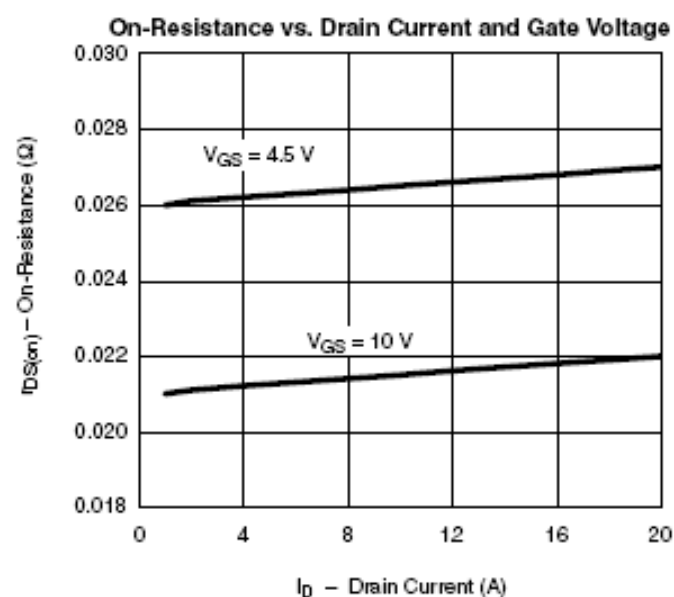
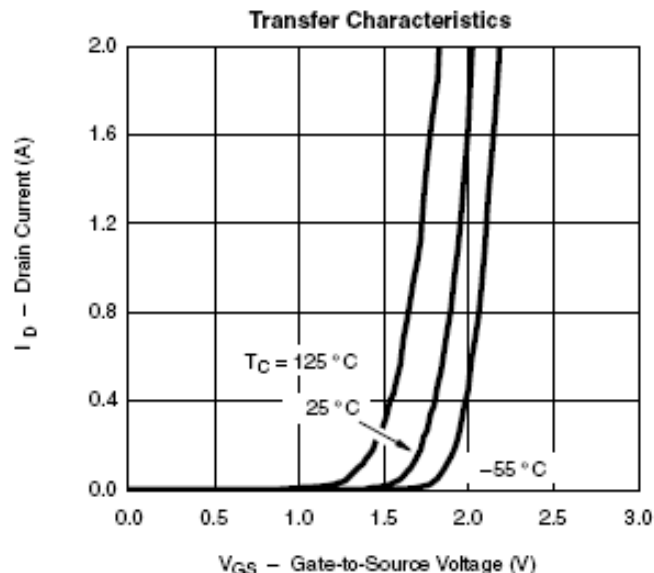
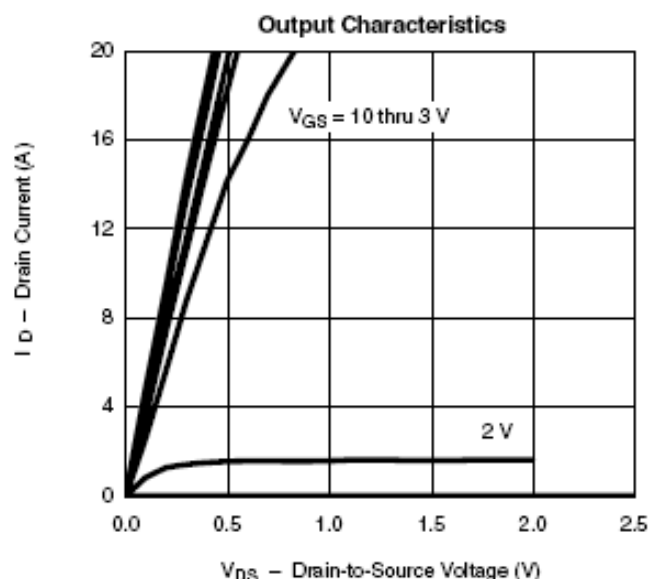
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V			1	μA
		V _{DS} =32V, V _{GS} =0V T _J =55°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} =5V, V _{GS} =4.5V	10			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		0.012	0.018	Ω
		V _{GS} =4.5V, I _D =8A		0.014	0.020	
		V _{GS} =2.5V, I _D =6A		0.020	0.028	
Forward Transconductance	g _{fs}	V _{DS} =15V, I _D =6.2A		13		S
Diode Forward Voltage	V _{SD}	I _S =2.3A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =4.5V I _D =5A		10	14	nC
Gate-Source Charge	Q _{gs}			2.8		
Gate-Drain Charge	Q _{gd}			3.2		
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V f=1MHz		850		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			75		
Turn-On Time	t _{d(on)}	V _{DD} =20V, R _L =4Ω I _D =5.0A, V _{GEN} =10V R _G =1Ω		6	12	nS
	t _r			10	20	
Turn-Off Time	t _{d(off)}			20	36	
	t _f			6	12	



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TYPICAL CHARACTERISTICS

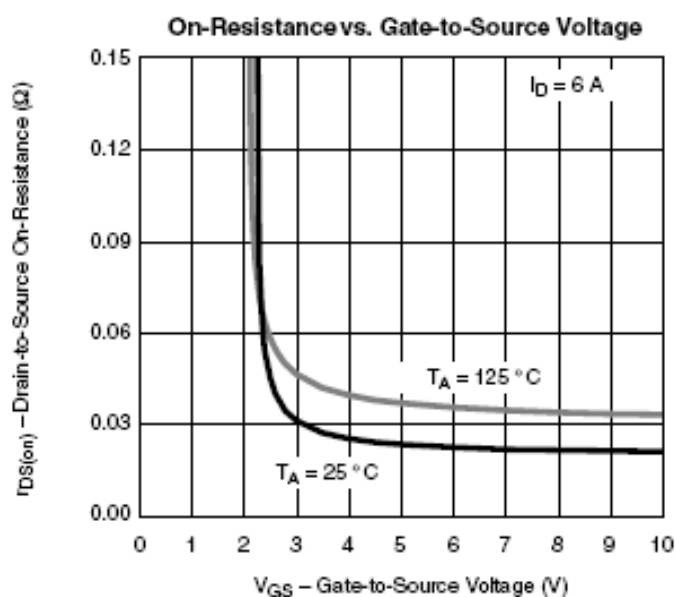
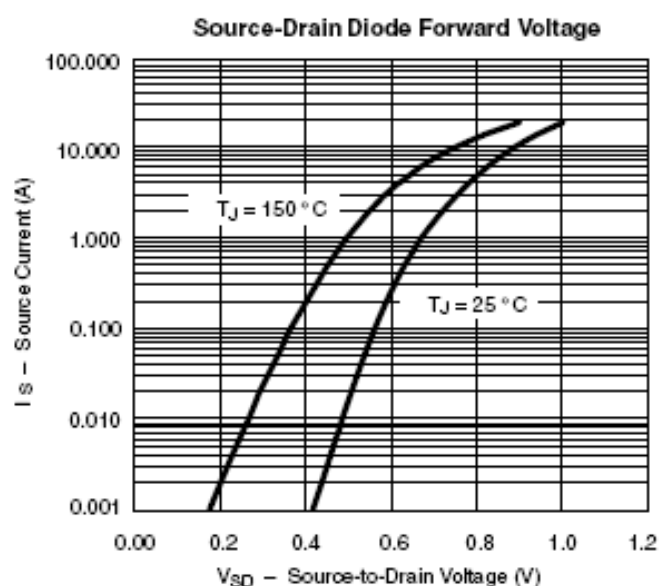
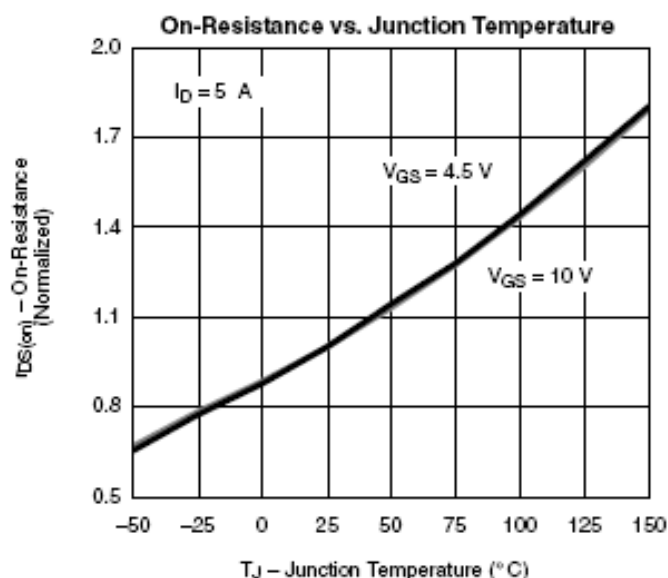
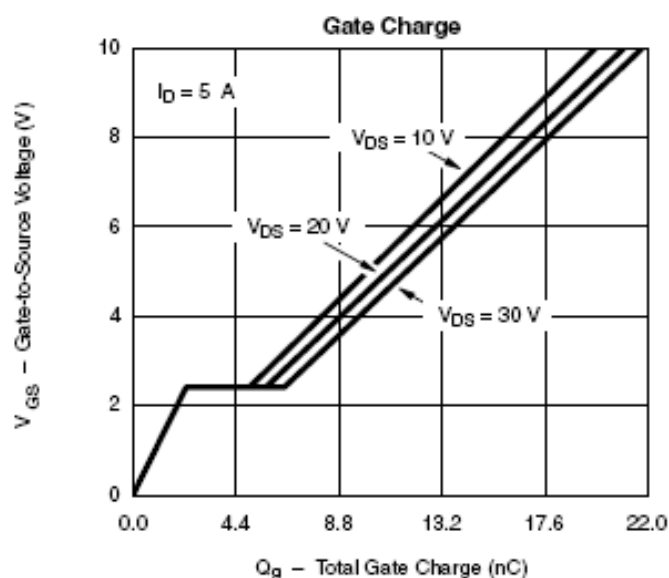




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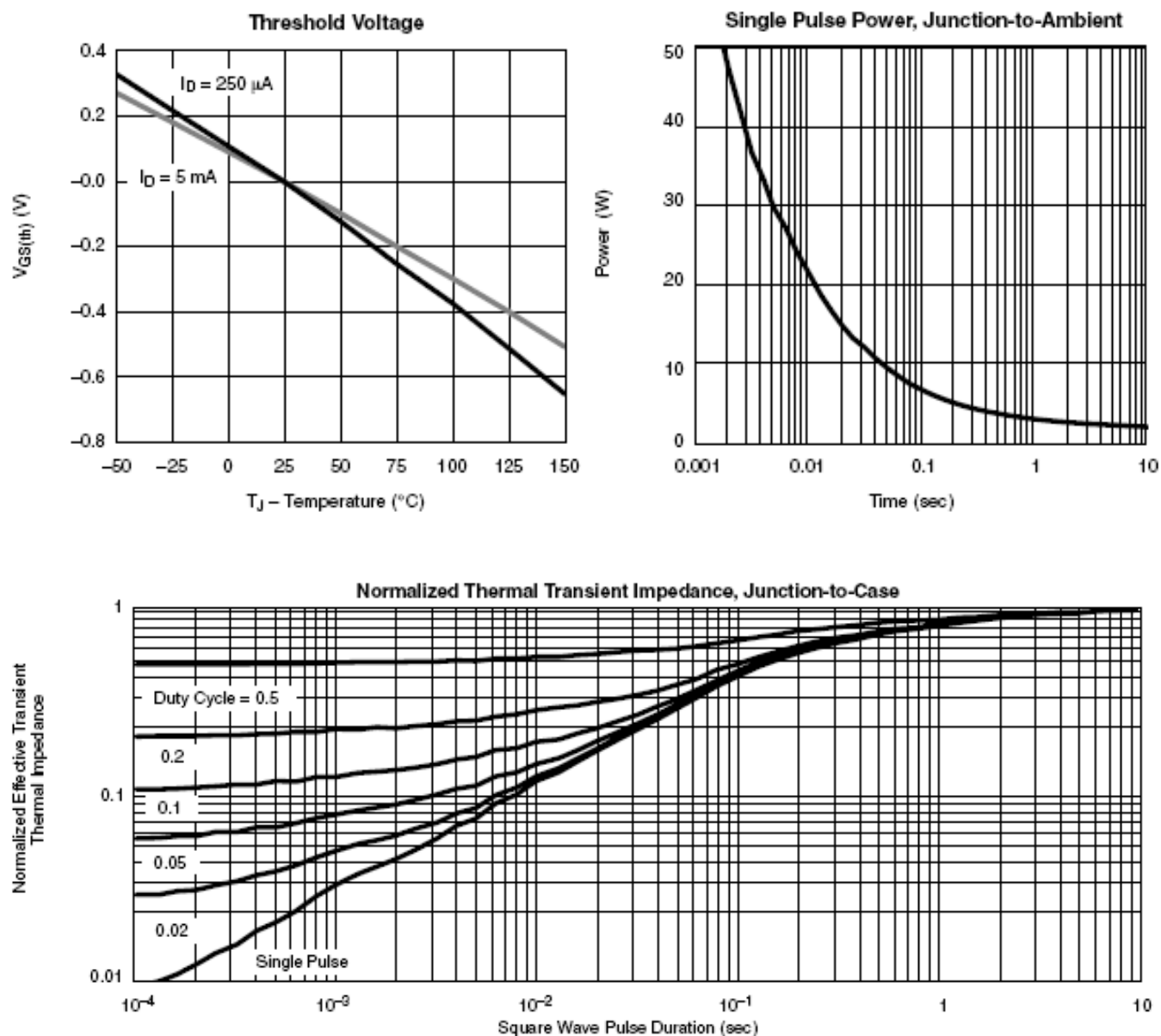




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TYPICAL CHARACTERISTICS





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