

DESCRIPTION

The SPN50T10 is the N-Channel enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN80T10 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 RDS(ON) and fast switching speed.

APPLICATIONS

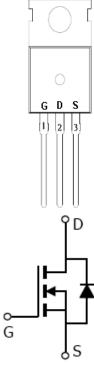
- Powered System
- DC/DC Converter
- Load Switch

FEATURES

- 100V/65A, RDS(ON)= $18m\Omega@VGS=10V$
- ♦ High density cell design for extremely low RDS(ON)
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-220-3L package design

PIN CONFIGURATION

TO-220-3L



PART MARKING



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

ORDERING INFORMATION

Part Number	Package	Part Marking		
SPN50T10T220TGB	TO-220-3L	SPN50T10		

[※] SPN50T10T220TGB: Tube; Pb − Free; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		Vdss	100	V
Gate –Source Voltage		VGSS	±20	V
Continuous Drain Current/Tr-150°C)	Ta=25°C	- ID	65	A
Continuous Drain Current(TJ=150°C)	Ta=70°C		40	A
Pulsed Drain Current		Ірм	200	A
Power Dissipation @ Ta=25°℃		PD	166	W
Operating Junction Temperature		Tı	-55/150	°C
Storage Temperature Range		Tstg	-55/150	°C
Thermal Resistance-Junction to Ambient		RθJA	62	°C/W

ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Тур	Max.	Unit
Static	-		•			
Drain-Source Breakdown Voltage	V(BR)DSS	VGS=0V,ID=250uA	100			V
Gate Threshold Voltage	VGS(th)	VDS=VGS,ID=250uA	2.0		4.0]
Gate Leakage Current	Igss	VDS=0V,VGS=±20V			±100	nA
Zero Gate Voltage Drain Current	IDSS	Vds=80V,Vgs=0V			25	uA
		V _{DS} =80V,V _{GS} =0V T _J =125°C			100	
Drain-Source On-Resistance	RDS(on)	Vgs=10V,Id=30A			18	mΩ
Forward Transconductance	gfs	VDS=10V,ID=30A		75		S
Diode Forward Voltage	Vsd	Is=30A,VGS=0V			1.3	V
Dynamic						
Total Gate Charge	Qg	V _{DS} =80V,V _{GS} =10V -I _D =40A		115	180	nC
Gate-Source Charge	Qgs			20		
Gate-Drain Charge	Qgd	-ID-40A		48		
Input Capacitance	Ciss	V _{DS} =25,V _{GS} =0V -f=1MHz		6000	9600	pF
Output Capacitance	Coss			550		
Reverse Transfer Capacitance	Crss			300		
Turn-On Time	td(on)	VDD=50V,RL=1Ω		21		nS
	tr			58		
Turn-Off Time	td(off)	ID=30A,VGEN=10V RG=1.66 Ω		41		
	tf			15		

TYPICAL CHARACTERISTICS

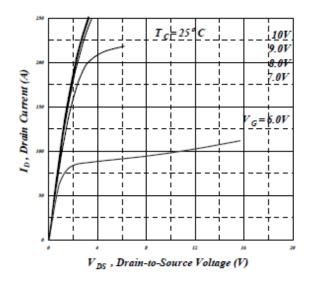


Fig 1. Typical Output Characteristics

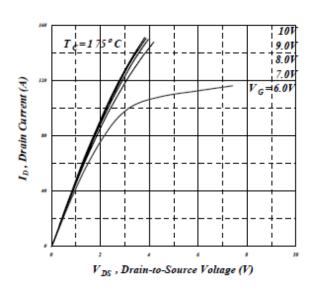


Fig 2. Typical Output Characteristics

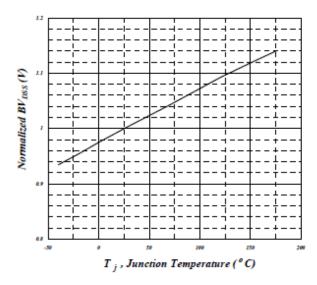


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

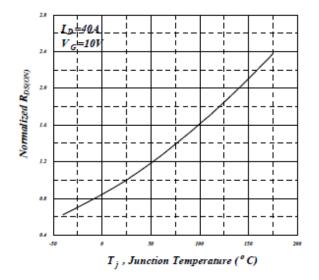


Fig 4. Normalized On-Resistance v.s. Junction Temperature

TYPICAL CHARACTERISTICS

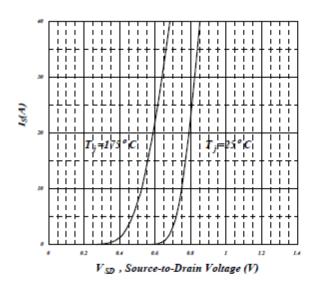


Fig 5. Forward Characteristic of Reverse Diode

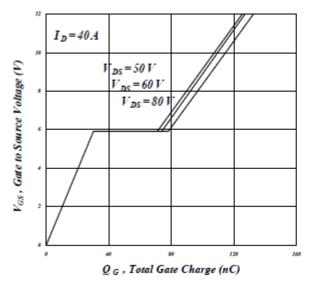


Fig 7. Gate Charge Characteristics

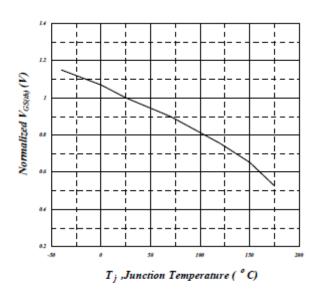


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

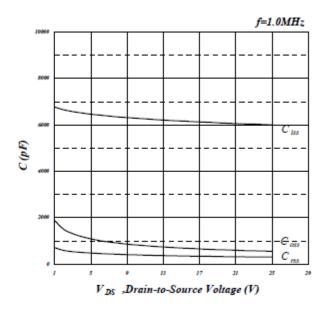


Fig 8. Typical Capacitance Characteristics

TYPICAL CHARACTERISTICS

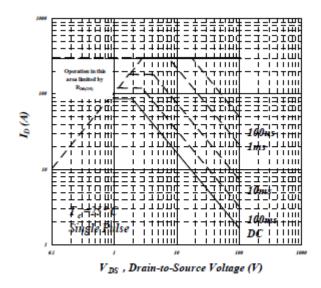


Fig 9. Maximum Safe Operating Area

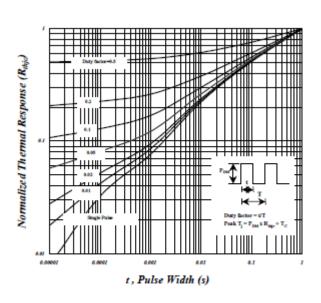


Fig 10. Effective Transient Thermal Impedance

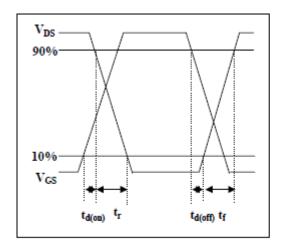


Fig 11. Switching Time Waveform

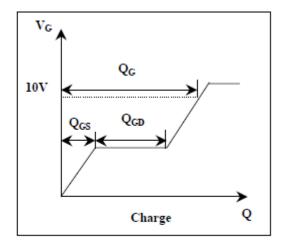


Fig 12. Gate Charge Waveform

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