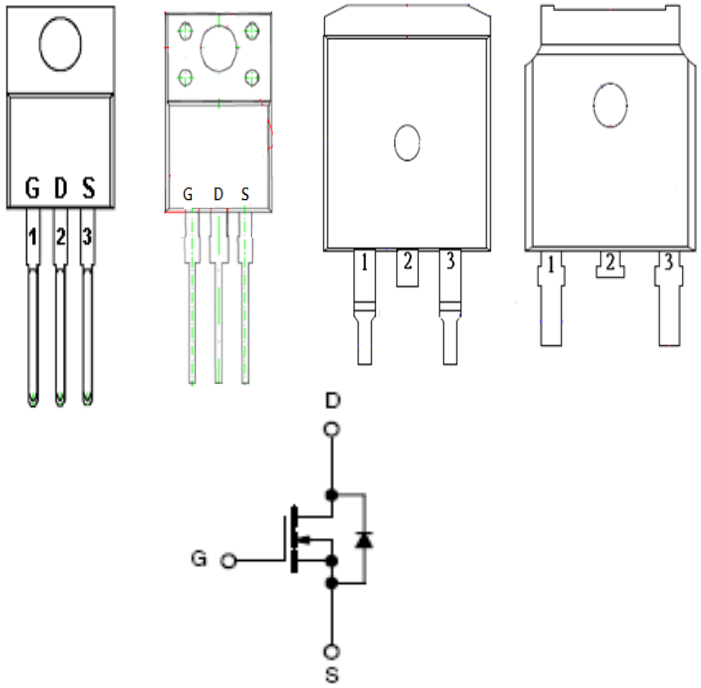
SPN65T10
N-Channel Enhancement Mode MOSFET

DESCRIPTION
The SPN65T10 is the N-Channel enhancement mode power field effect transistor which is produced using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suitable for synchronous rectifier application, Motor control power management and other Power Tool circuits. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

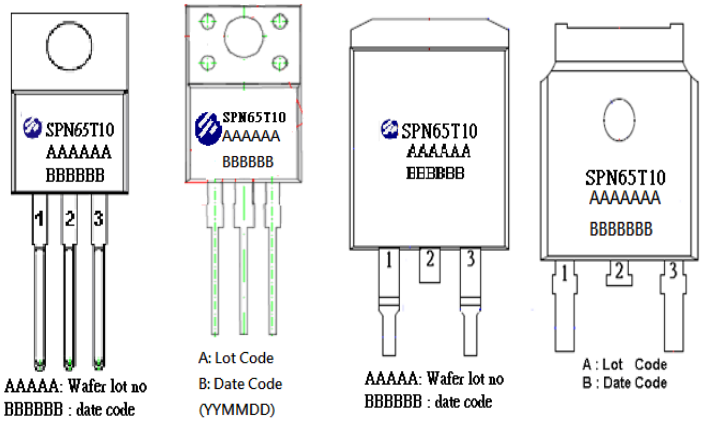
APPLICATIONS
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Power Tool
- Motor Control

FEATURES
- 100V/68A, $R_{DS(ON)}$=14mΩ@V_{GS}=10V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-220-3L/TO-220F-3L/TO-263-2L/TO-252-2L package design

PIN CONFIGURATION
TO-220-3L TO-220F-3L TO-263-2L TO-252-2L



PART MARKING
TO-220-3L TO-220F-3L TO-263-2L TO-252-2L



SPN65T10
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN65T10T220TGB	TO-220-3L	SPN65T10
SPN65T10T220FTGB	TO-220F-3L	SPN65T10
SPN65T10T262RGB	TO-263-2L	SPN65T10
SPN65T10T252RGB	TO-252-2L	SPN65T10

※ SPN65T10T220TGB : Tube ; Pb – Free ; Halogen – Free
※ SPN65T10T220FTGB : Tube ; Pb – Free ; Halogen – Free
※ SPN65T10T262RGB : Tape&Reel ; Pb – Free ; Halogen - Free
※ SPN65T10T252RGB : Tape&Reel ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150°C)	T_A=25°C	I_D	68	A
	T_A=70°C		45	
Pulsed Drain Current		I_{DM}	260	A
Power Dissipation@ Tc=25℃	TO-220/TO-263	P_D	104	W
Power Dissipation@ Tc=25℃	TO-220F/TO-252		93	
Avalanche Energy with Single Pulse (Tj=25℃, L = 0.1mH , I_D = 23A , V_{DS} =100V.)		E_{AS}	171	mJ
Operating Junction Temperature		T_J	-55/150	°C
Storage Temperature Range		T_{STG}	-55/150	°C
Thermal Resistance-Junction to Case (TO-220/TO-220F/TO-263)		$R_{\theta JC}$	1.2	°C/W
Thermal Resistance-Junction to Case (TO-252)		$R_{\theta JC}$	1.35	°C/W

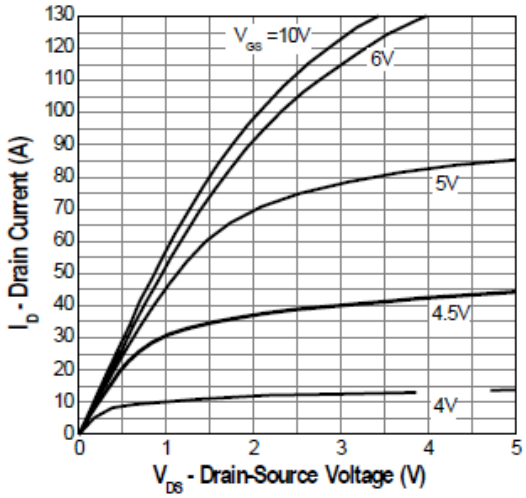
ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

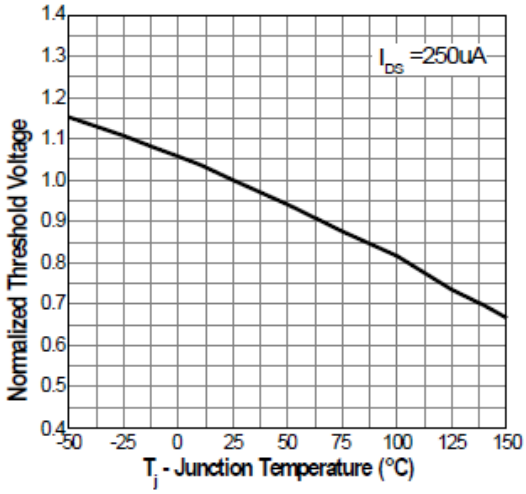
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.0		4.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V			10	uA
		V_{DS}=80V,V_{GS}=0V T_J=150 ℃			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=45A			14	mΩ
Diode Forward Voltage	V_{SD}	I_S=45A,V_{GS}=0V			1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=80V,V_{GS}=4.5V I_D=30A		57		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			17.5		
Input Capacitance	C_{iss}	V_{DS}=25V_{GS}=0V f=1MHz		2920		pF
Output Capacitance	C_{oss}			261		
Reverse Transfer Capacitance	C_{rss}			162		
Turn-On Time	$t_{d(on)}$	V_{DD}=50V,R_L=1.6Ω I_D=30A,V_{GEN}=10V R_G=10Ω		15		nS
	t_r			13		
Turn-Off Time	$t_{d(off)}$			55		
	t_f			21		

TYPICAL CHARACTERISTICS

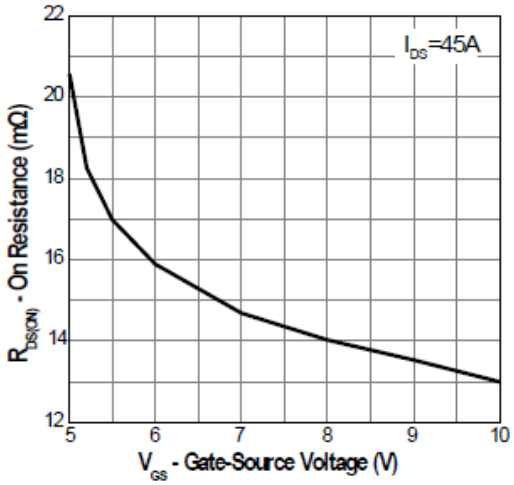
Output Characteristics



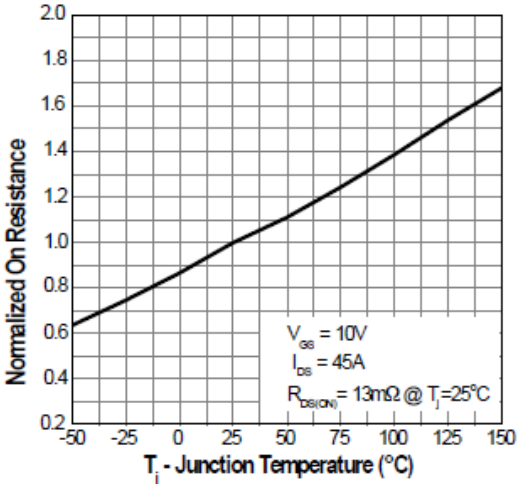
Gate Threshold Voltage vs. Temperature



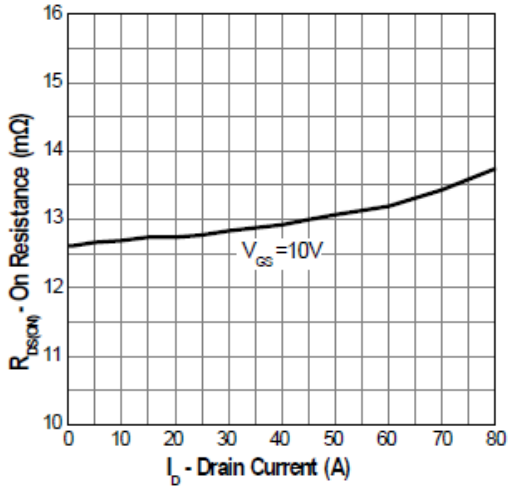
On-Resistance vs. Gate-Source Voltage



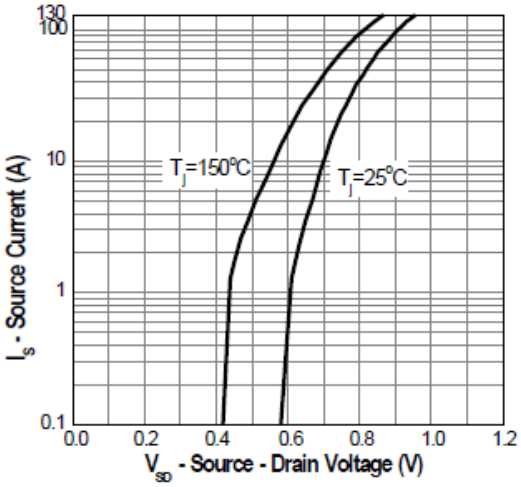
On-Resistance vs. Temperature



On-Resistance vs. Drain Current

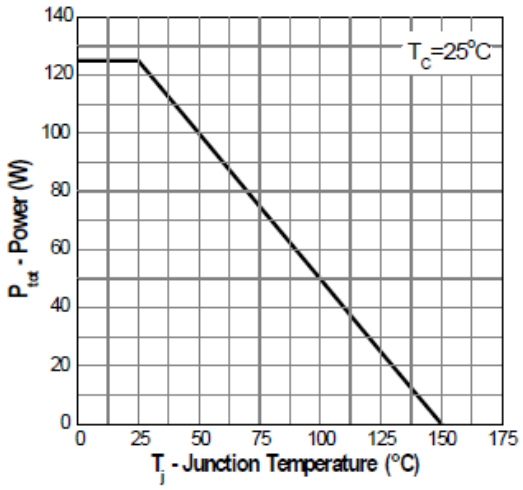


Source-Drain Diode Forward Characteristics

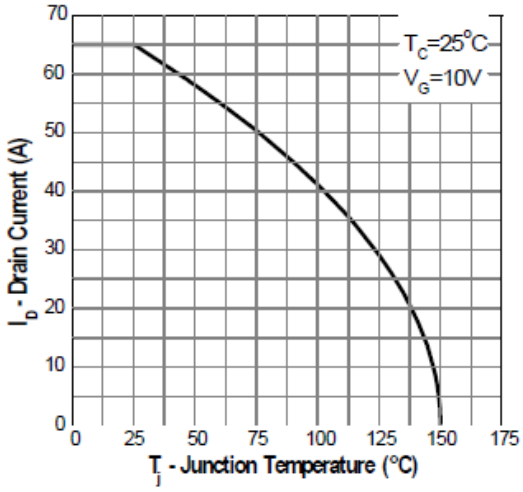


TYPICAL CHARACTERISTICS

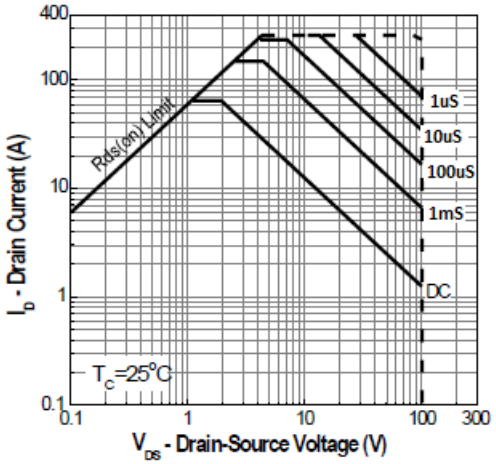
Power Dissipation



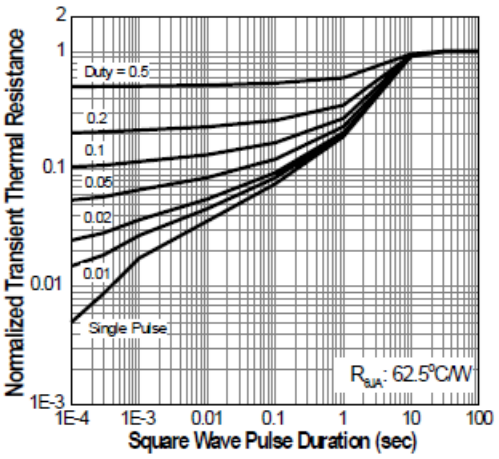
Drain Current vs. Temperature



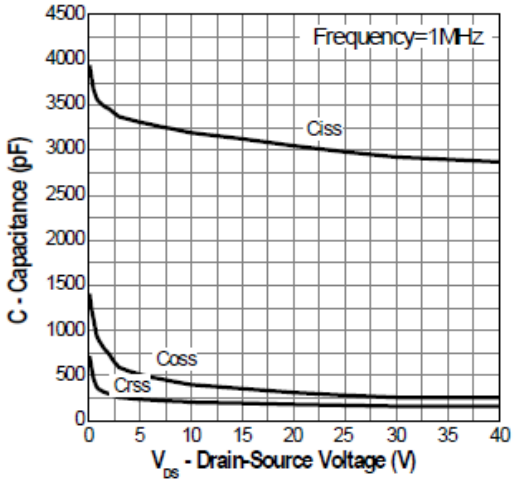
Safe Operation Area



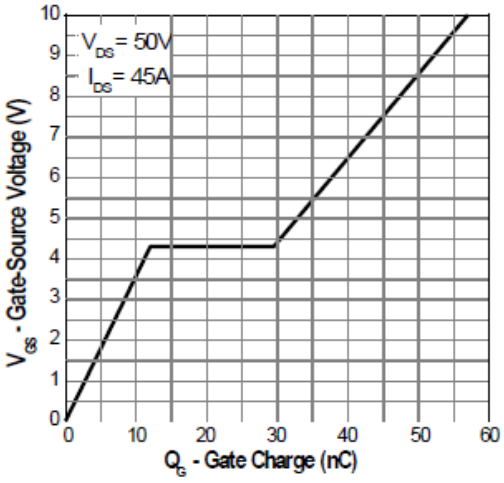
Transient Thermal Impedance



Capacitance Characteristics



Gate-Charge Characteristics



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