



# SPP10T10

## P-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPP10T10 is the P-Channel logic enhancement mode power field effect transistors are produced using super high cell density , DMOS trench technology. The SPP10T10 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

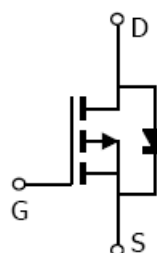
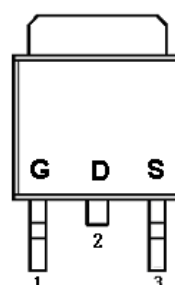
- -100V/-8A,  $R_{DS(ON)}=200m\Omega @ V_{GS}=-10V$
- -100V/-8A,  $R_{DS(ON)}=220m\Omega @ V_{GS}=-4.5V$
- High density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-252-2L package design

### APPLICATIONS

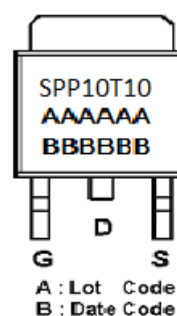
- Powered System
- DC/DC Converter
- Load Switch
- Power Tool
- Motor Control

### 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
SPP10T10T252RGB	TO-252-2L	SPP10T10

※ SPP10T10T252RGB : Tape Reel ; Pb – Free ; Halogen - Free

### ABSOLUTE MAXIMUM RATINGS

(T<sub>A</sub>=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V <sub>DSS</sub>	-100	V
Gate –Source Voltage		V <sub>GSS</sub>	±20	V
Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>C</sub> =25°C	I <sub>D</sub>	-8	A
	T <sub>C</sub> =100°C		-5.5	
Pulsed Drain Current		I <sub>DM</sub>	-20	A
Power Dissipation	T <sub>C</sub> =25°C	P <sub>D</sub>	35.7	W
Operating Junction Temperature		T <sub>J</sub>	-55/150	°C
Storage Temperature Range		T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Case		R <sub>θJC</sub>	3.5	°C/W



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### ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	-1.0		-3.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-80V, V_{GS}=0V$ $T_J=25^\circ C$			-1.0	uA
		$V_{DS}=-80V, V_{GS}=0V$ $T_J=55^\circ C$			-100	
Continuous-Source Current	$I_S$	$V_D=V_G=0V$ , Force Current			-8.5	A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3A$			200	mΩ
		$V_{GS}=-4.5V, I_D=-1A$			220	
Diode Forward Voltage	$V_{SD}$	$I_S=-1A, V_{GS}=0V$			-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-50V,$ $V_{GS}=-10V, I_D=-1A$		18		nC
Gate-Source Charge	$Q_{gs}$			4.25		
Gate-Drain Charge	$Q_{gd}$			7.0		
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V$ $f=1MHz$		1310		pF
Output Capacitance	$C_{oss}$			88		
Reverse Transfer Capacitance	$C_{rss}$			55		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-30V,$ $I_D=-1.5A,$ $V_{GEN}=-10V, R_G=6\Omega$		8.5		nS
	$t_r$			12		
Turn-Off Time	$t_{d(off)}$			50		
	$t_f$			35		

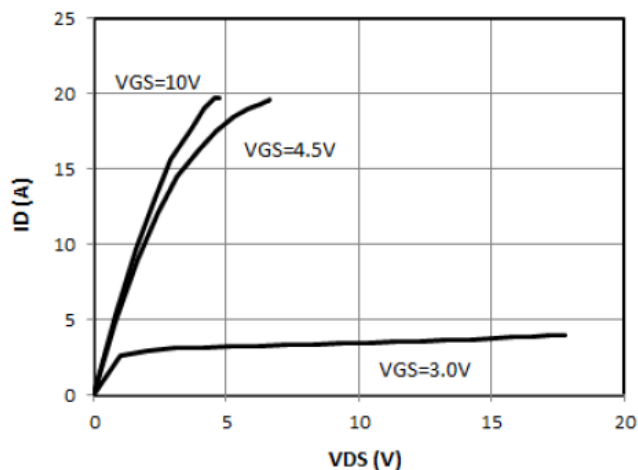


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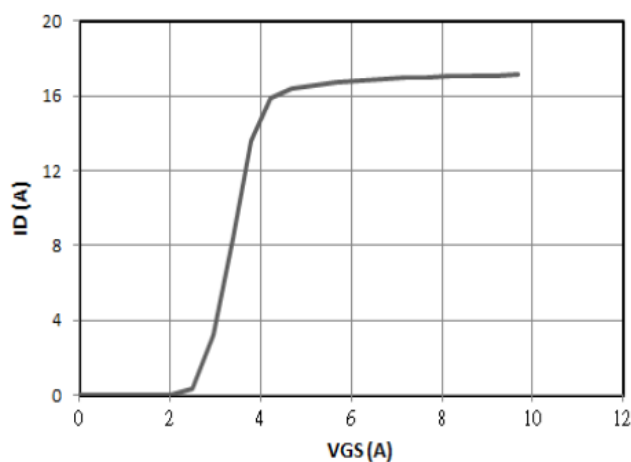
## P-Channel Enhancement Mode MOSFET

### TYPICAL CHARACTERISTICS

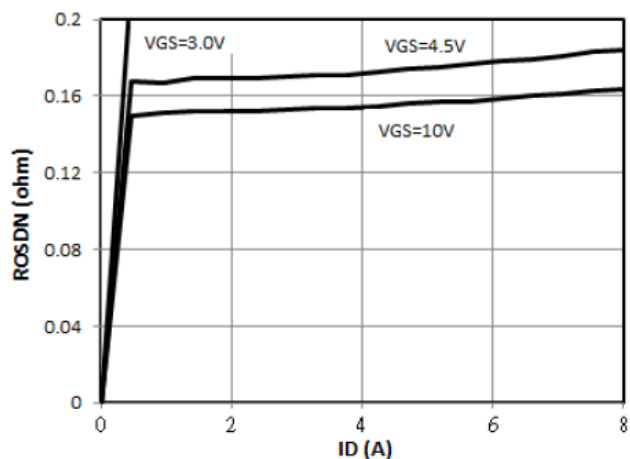
TYPICAL OUTPUT CHARACTERISTICS



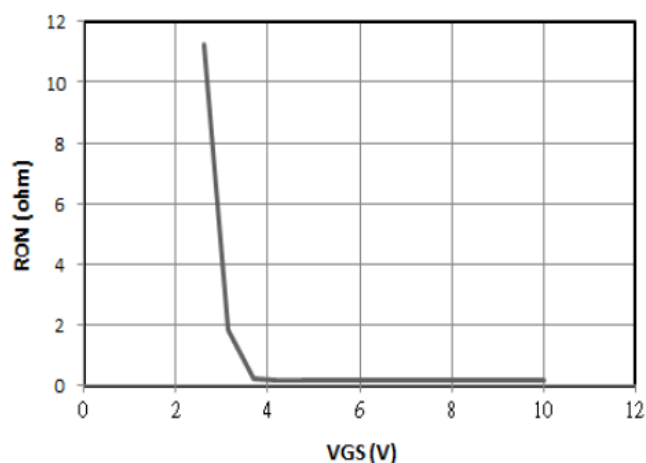
TYPICAL TRANSFER CHARACTERISTICS



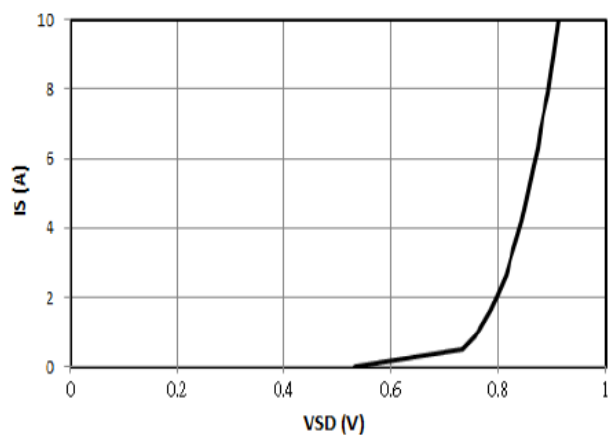
ON-RESISTANCE VS. DRAIN CURRENT AND GATE VOLTAGE



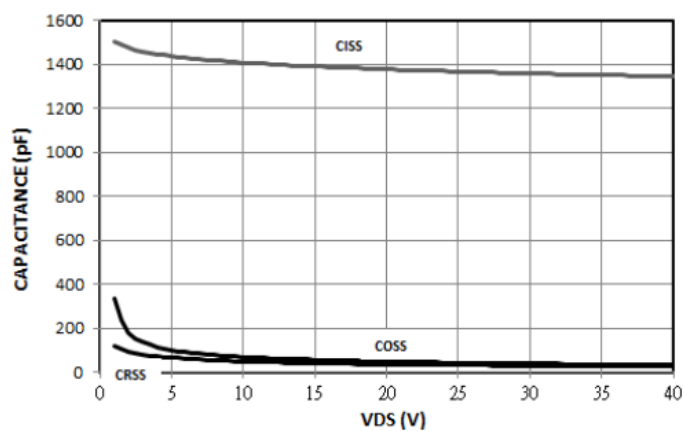
ON-RESISTANCE VS. GATE-SOURCE VOLTAGE



TYPICAL SOURCE-DRAIN DIODE FORWARD VOLTAGE



TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



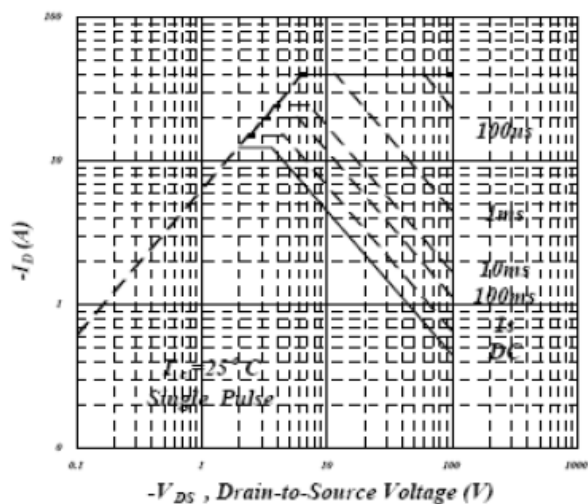


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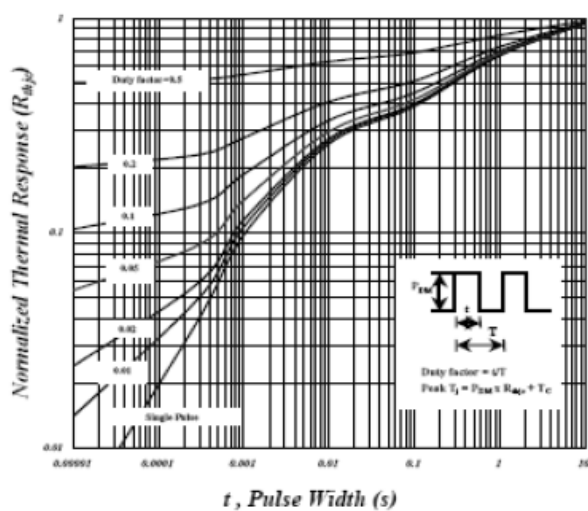
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### TYPICAL CHARACTERISTICS

#### Maximum Safe Operating Area



#### Effective Transient Thermal Impedance





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