

# SPC6602

## DESCRIPTION

The SPC6602 is the N- and P-Channel 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 and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

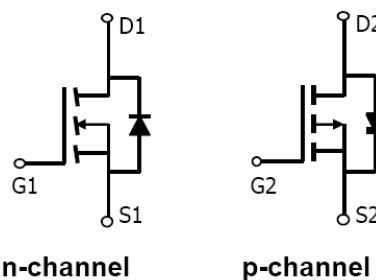
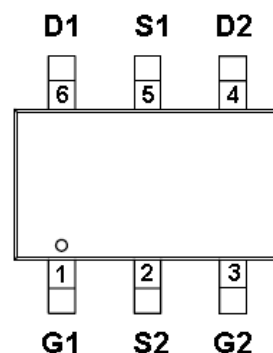
## FEATURES

- ◆ N-Channel  
30V/2.8A,  $R_{DS(ON)} = 60m\Omega @ V_{GS} = 10V$   
30V/2.3A,  $R_{DS(ON)} = 80m\Omega @ V_{GS} = 4.5V$
- ◆ P-Channel  
-30V/-2.8A,  $R_{DS(ON)} = 105m\Omega @ V_{GS} = -10V$   
-30V/-2.5A,  $R_{DS(ON)} = 135m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TSOP- 6P package design

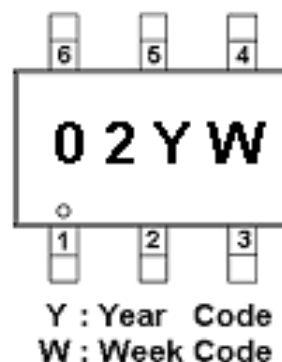
## APPLICATIONS

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

## PIN CONFIGURATION( TSOP- 6P )



## PART MARKING



# SPC6602

## PIN DESCRIPTION

Pin	Symbol	Description
1	G1	Gate 1
2	S2	Source 2
3	G2	Gate 2
4	D2	Drain 2
5	S1	Source 1
6	D1	Drain1

## ORDERING INFORMATION

Part Number	Package	Part Marking
SPC6602ST6RG	TSOP- 6P	02YW
SPC6602ST6RGB	TSOP- 6P	02YW

※ Week Code : A ~ Z( 1 ~ 26 ) ; a ~ z( 27 ~ 52 )

※ SPC6602ST6RG : Tape Reel ; Pb – Free

※ SPC6602ST6RGB : Tape Reel ; Pb – Free ; Halogen - Free

## ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	V <sub>DSS</sub>	30	-30	V	
Gate –Source Voltage	V <sub>GSS</sub>	±20	±20	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	2.8	-2.8	A
		T <sub>A</sub> =70°C	2.3	-2.1	
Pulsed Drain Current	I <sub>DM</sub>	10	-8	A	
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	1.25	-1.4	A	
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	1.15		W
		T <sub>A</sub> =70°C	0.75		
Operating Junction Temperature	T <sub>J</sub>	-55/150		°C	
Storage Temperature Range	T <sub>STG</sub>	-55/150		°C	
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	T ≤ 10sec	50	52	°C/W
		Steady State	90	90	

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Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit		
<b>Static</b>								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	N-Ch	30		V		
		$V_{GS}=0V, I_D=-250\mu A$	P-Ch	-30				
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	N-Ch	1	3			
		$V_{DS}=V_{GS}, I_D=-250\mu A$	P-Ch	1	-3			
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$	N-Ch		$\pm 100$	nA		
		$V_{DS}=0V, V_{GS}=\pm 20V$	P-Ch		$\pm 100$			
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$	N-Ch		1	uA		
		$V_{DS}=-24V, V_{GS}=0V$	P-Ch		-1			
		$V_{DS}=24V, V_{GS}=0V \quad T_J=55^\circ C$	N-Ch		10			
		$V_{DS}=-24V, V_{GS}=0V \quad T_J=55^\circ C$	P-Ch		-10			
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	N-Ch	6		A		
		$V_{DS} \leq -5V, V_{GS} = -10V$	P-Ch	-6				
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.8A$	N-Ch		0.043	0.060	Ω	
		$V_{GS} = -10V, I_D = -2.8A$	P-Ch		0.088	0.105		
		$V_{GS} = 4.5V, I_D = 2.3A$	N-Ch		0.056	0.080		
		$V_{GS} = -4.5V, I_D = -2.5A$	P-Ch		0.118	0.135		
Forward Transconductance	gfs	$V_{DS}=4.5V, I_D=2.8A$	N-Ch		4.6	S		
		$V_{DS}=-10V, I_D=-2.8A$	P-Ch		4			
Diode Forward Voltage	$V_{SD}$	$I_S = 1.25A, V_{GS} = 0V$	N-Ch		0.8	1.2	V	
		$I_S = -1.2A, V_{GS} = 0V$	P-Ch		-0.8	-1.2		
<b>Dynamic</b>								
Total Gate Charge	$Q_g$	N-Channel $V_{DS}=15, V_{GS}=4.5V, I_D=2.0A$	N-Ch		4.5	10	nC	
Gate-Source Charge	$Q_{gs}$		P-Ch		5.8	10		
		Gate-Drain Charge	$Q_{gd}$	N-Ch		0.8		
P-Ch				0.8				
Turn-On Time	$t_{d(on)}$	N-Channel $V_{DD}=15, R_L=10\Omega$ $V_{GEN}=10V, R_G=3\Omega$	N-Ch		8	20	nS	
			P-Ch		9	20		
	Turn-Off Time		$t_{d(off)}$	N-Ch		12		30
				P-Ch		9		20
Turn-Off Time	$t_f$	P-Channel $V_{DD}=-15V, R_L=15\Omega$ $V_{GEN}=-10V, R_G=3\Omega$	N-Ch		17	35		
			P-Ch		18	35		
	Turn-Off Time		$t_f$	N-Ch		8		20
				P-Ch		6		20