



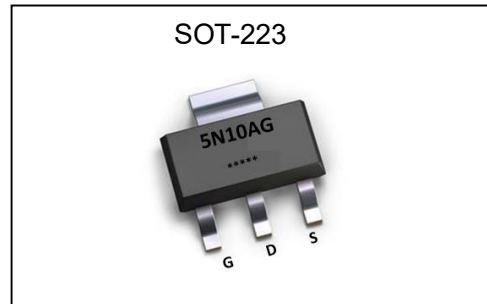
### General Description :

The PJM10H05NST uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications. The package form is SOT-223, which accords with the RoHS standard.

$V_{DSS}$	100	V
$I_D$	5	A
$P_D$	3	W
$R_{DS(ON)type}$	200	m $\Omega$

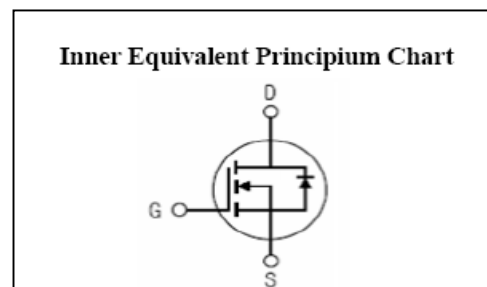
### Features :

- $R_{DS(ON)} < 300m\Omega @ V_{GS}=10V$  ( Typ : 200m $\Omega$  )
- $V_{DS}=100V, I_D=5A$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation



### Applications :

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



### Absolute Rating ( $T_c= 25^\circ C$ unless otherwise specified ) :

Symbol	Parameter	Rating	Units
$V_{DSS}$	Drain-to-Source Voltage	100	V
$I_D$	Continuous Drain Current	5	A
$I_{DM}$	Pulsed Drain Current	20	A
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$P_D$	Power Dissipation	3	W
$E_{AS}$	Single pulse avalanche energy <sup>5</sup>	20	mJ
$T_J, T_{stg}$	Operating Junction and Storage Temperature Range	175 , -55 to 175	$^\circ C$



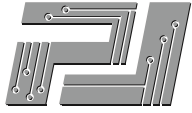
### Electrical Characteristics ( Tc= 25°C unless otherwise specified ) :

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V <sub>DSS</sub>	Drain to Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	--	--	V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =100V, V <sub>GS</sub> = 0V, T <sub>a</sub> = 25°C	--	--	1.0	μA
I <sub>GSS(F)</sub>	Gate to Source Forward Leakage	V <sub>GS</sub> =+20V	--	--	0.1	μA
I <sub>GSS(R)</sub>	Gate to Source Reverse Leakage	V <sub>GS</sub> =-20V	--	--	-0.1	μA

ON Characteristics <sup>3</sup>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R <sub>DS(ON)</sub>	Drain-to-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =3A	--	200	300	mΩ
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	3.0	V
Pulse width tp≤380μs, δ≤2%						

Dynamic Characteristics <sup>4</sup>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =1A	1	--	--	S
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V f=1.0MHz	--	190	--	pF
C <sub>oss</sub>	Output Capacitance		--	23	--	
C <sub>rss</sub>	Reverse Transfer Capacitance		--	13	--	

Resistive Switching Characteristics <sup>4</sup>						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t <sub>d(ON)</sub>	Turn-on Delay Time	V <sub>DD</sub> =50V, R <sub>L</sub> =39Ω, I <sub>D</sub> =1.3A V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω	--	6	--	ns
t <sub>r</sub>	Rise Time		--	10	--	
t <sub>d(OFF)</sub>	Turn-Off Delay Time		--	10	--	
t <sub>f</sub>	Fall Time		--	6	--	
Q <sub>g</sub>	Total Gate Charge	V <sub>DD</sub> =50V, I <sub>D</sub> =1.3A V <sub>GS</sub> =10V	--	5.2	--	nC
Q <sub>gs</sub>	Gate to Source Charge		--	0.75	--	
Q <sub>gd</sub>	Gate to Drain ("Miller") Charge		--	1.4	--	



Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$I_S$	Continuous Source Current <sup>2</sup> (Body Diode)		--	--	5	A
$V_{SD}$	Diode Forward Voltage <sup>3</sup>	$I_S=5A, V_{GS}=0V$	--	--	1.5	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case <sup>2</sup>	42	°C/W

1: Repetitive Rating: Pulse width limited by maximum junction temperature.

2: Surface Mounted on FR4 Board,  $t \leq 10\text{sec}$ .

3: Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

4: Guaranteed by design, not subject to production

5: EAS condition :  $T_j=25^\circ\text{C}, V_{DD}=50\text{V}, V_G=10\text{V}, L=0.5\text{mH}, R_g=25\Omega$

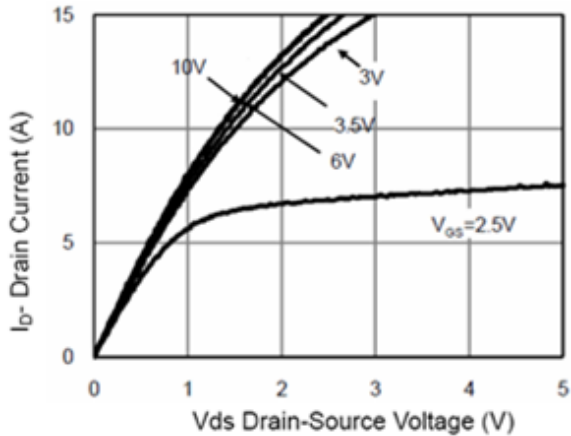


Figure 1 Output Characteristics

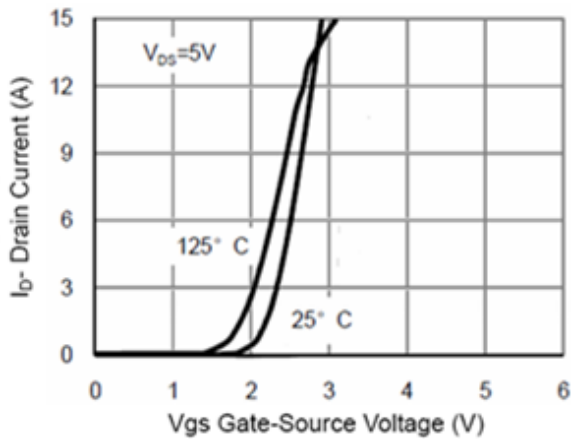


Figure 2 Transfer Characteristics

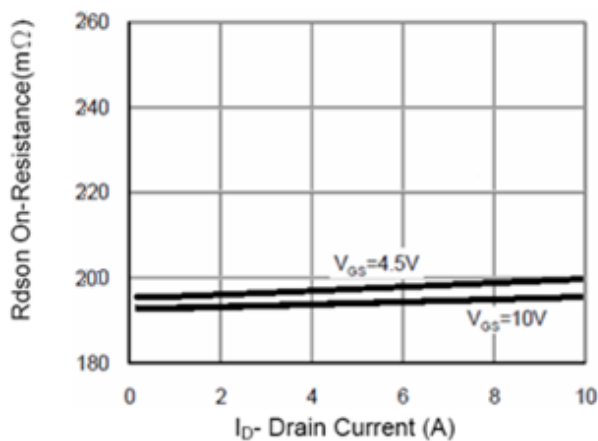


Figure 3 Rdson- Drain Current

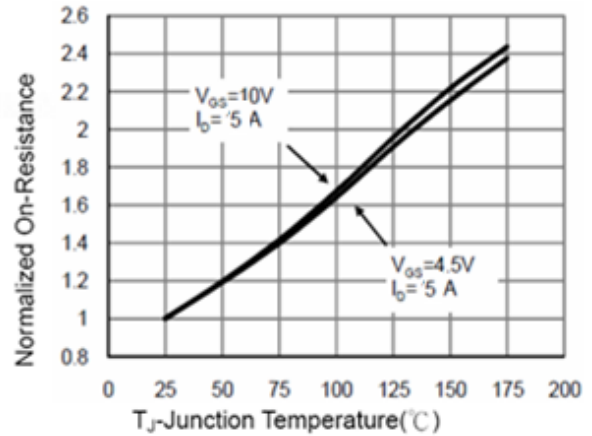


Figure 4 Rdson-Junction Temperature

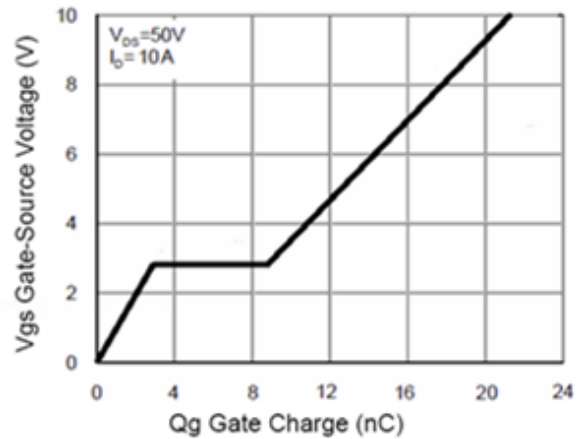


Figure 5 Gate Charge

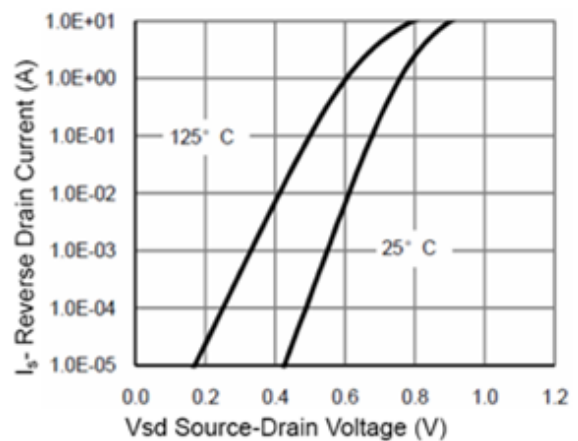


Figure 6 Source- Drain Diode Forward

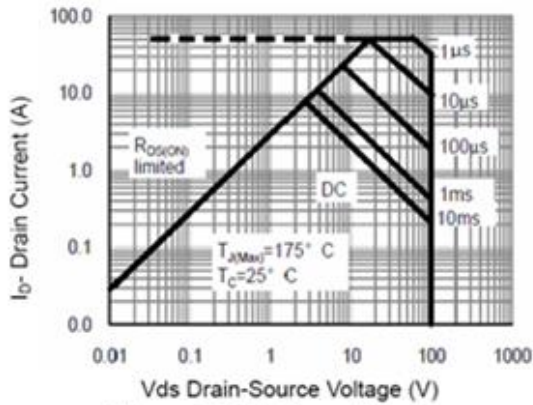


Figure 8 Safe Operation Area

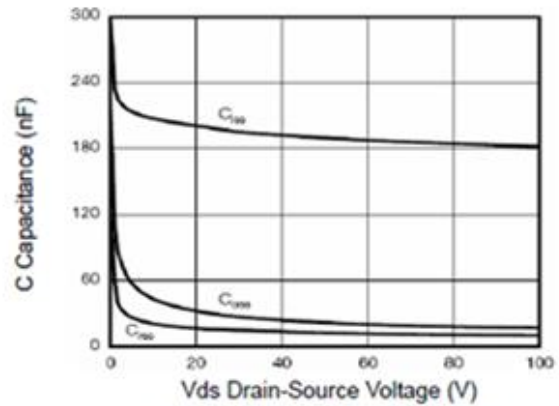


Figure 7 Capacitance vs Vds

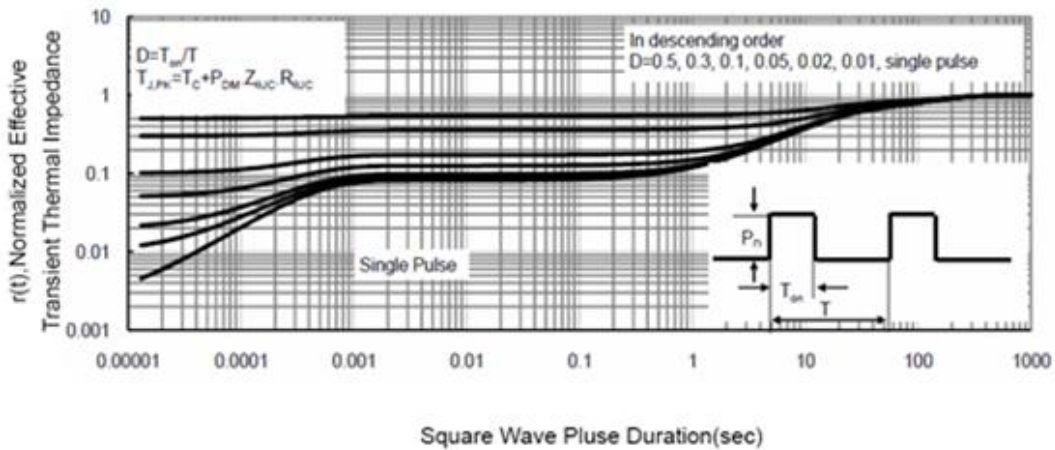


Figure 11 Normalized Maximum Transient Thermal Impedance