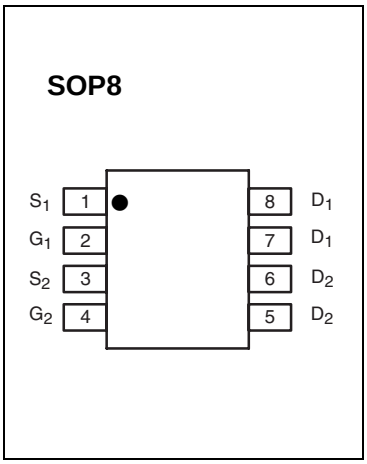
SOP8 Plastic-Encapsulate MOSFETS

NCE4503

N-and P-Channel Enhancement Mode Power MOSFET

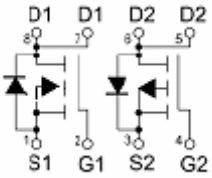


DESCRIPTION

Advance Power MOSFETs provide the designer with the best combination of fast switching, ruggedized device desigh, low on-resistance and cost -effectiveness.

The SOP8 package is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

MARKING: 4503



Maximum ratings (T_a=25℃ unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current [a]	T_a=25℃	I_D	6.9	-6.3	A
	T_a=70℃		5.5	-5	
Pulsed Drain Current [b]		I_{DM}	20	-20	
Power Dissipation		P_D	2.0		W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	62.5		℃/W
Operating Junction Temperature		T_J	150		℃
Storage Temperature		T_{STG}	-55 ~+150		

Notes :

a. These tests are performed with infinite heat sink.

b.Pulse width by Max.junction temperature.

Electrical characteristics (T_a=25℃ unless otherwise noted)

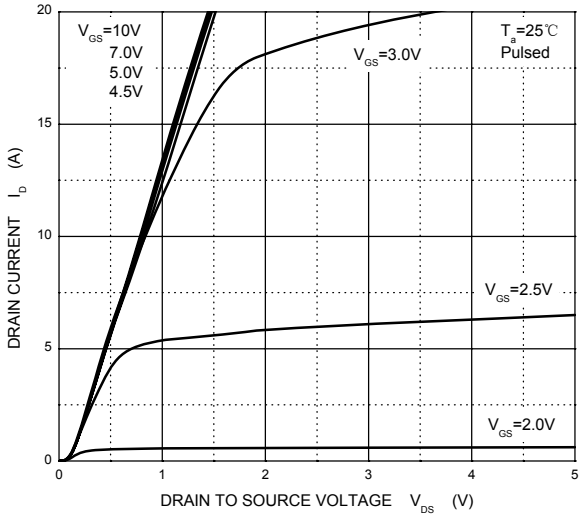
Parameter	Symbol	Test Condition		Min	Typ	Max	Units
Static							
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0, I_D =250μA	N-Ch	30			V
		V_{GS}=0, I_D =-250μA	P-Ch	-30			
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	N-Ch	1		3	V
		V_{DS} =V_{GS}, I_D =-250μA	P-Ch	-1		-3	
Gate-body leakage	I_{GSS}	V_{DS} =0V, V_{GS} =±20V	N-Ch			±100	nA
			P-Ch				
Zero gate voltage drain current	I_{DSS}	V_{DS} =30V, V_{GS} =0V	N-Ch			1	μA
		V_{DS} =-30V, V_{GS} =0V	P-Ch			-1	
Drain-source on-resistance[c]	$R_{DS(on)}$	V_{GS} =10V, I_D =6A	N-Ch			0.028	Ω
		V_{GS} =-10V, I_D =-6A	P-Ch			0.036	
		V_{GS} =4.5V, I_D =4A	N-Ch			0.042	
		V_{GS} =-4.5V, I_D =-4A	P-Ch			0.055	
Forward transconductance	g_{fs}	V_{DS} =10V, I_D =6A	N-Ch	4			S
		V_{DS} =-10V, I_D =-6A	P-Ch				
Diode forward voltage[c]	V_{SD}	I_S=1.7A,V_{GS}=0V	N-Ch			1.2	V
		I_S=-1.7A,V_{GS}=0V	P-Ch			-1.2	
Dynamic							
Total gate charge[c]	Q_g	N-Channel V_{DS} =24V,V_{GS} =4.5V,I_D =6A P-Channel V_{DS} =-24V,V_{GS} =-4.5V,I_D =-6A	N-Ch			13.5	nC
			P-Ch			20	
Gate-source charge[d]	Q_{gs}		N-Ch		1.4		
			P-Ch		2		
Gate-drain charge[d]	Q_{gd}		N-Ch		4.7		
			P-Ch		7		
Turn-on delay time[c]	$t_{d(on)}$	N-Channel V_{DS}=20V,R_D=20Ω, I_D=1A, V_{GS}=10V,R_G=3.3Ω P-Channel V_{DS}=-15V,R_D=15Ω, I_D=-1A, V_{GS}=-10V,R_G=3.3Ω	N-Ch		5		ns
			P-Ch		8		
Rise time[d]	t_r		N-Ch		8		
			P-Ch		7		
Turn-off delay time[d]	$t_{d(off)}$		N-Ch		18.5		
			P-Ch		34		
Fall time[d]	t_f		N-Ch		9		
			P-Ch		26		
Input Capacitance[d]	C_{iss}	N-Channel V_{DS} =25V,V_{GS} =0V,f =1MHz P-Channel V_{DS} =-25V,V_{GS} =0V,f =1MHz	N-Ch			770	pF
			P-Ch			1380	
Output Capacitance[d]	C_{oss}		N-Ch		80		
			P-Ch		150		
Reverse Transfer Capacitance[d]	C_{rss}		N-Ch		75		
			P-Ch		140		

Notes :

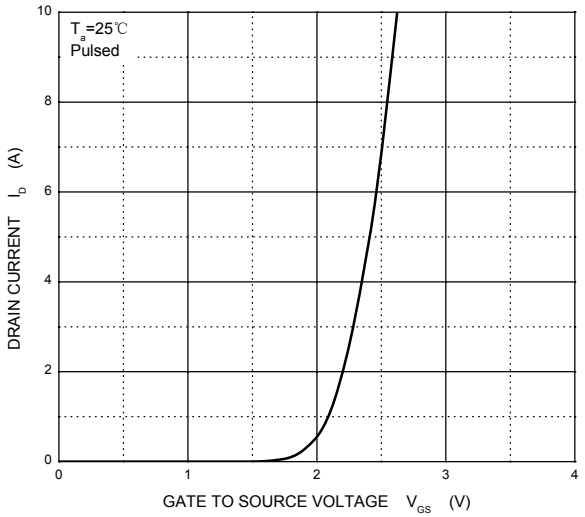
c. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

d. Guaranteed by design, not subject to production testing.

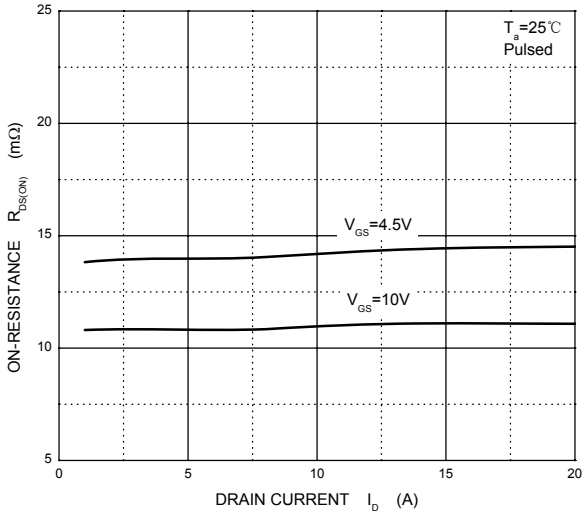
Output Characteristics



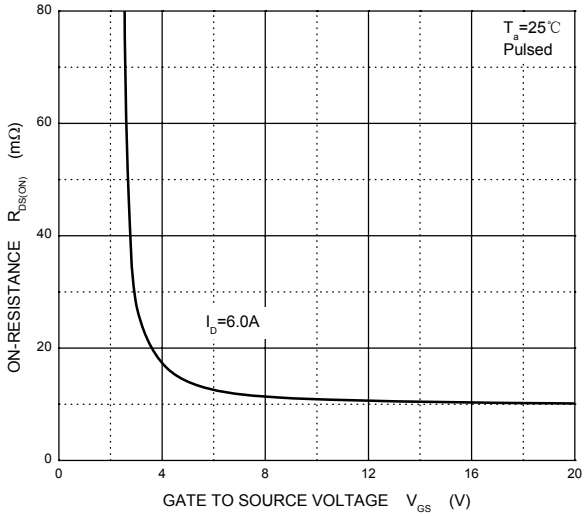
Transfer Characteristics



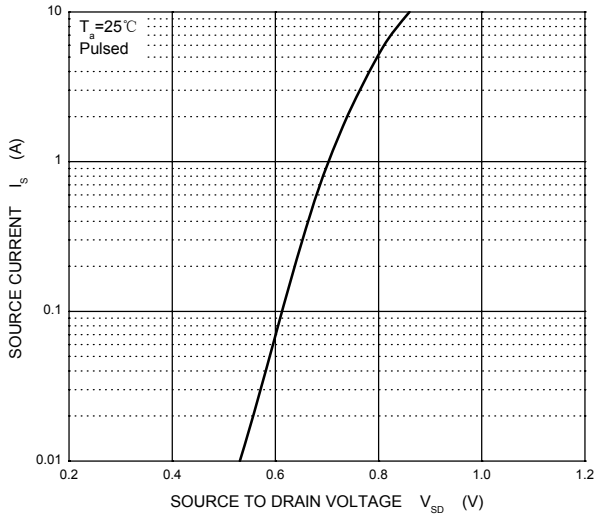
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



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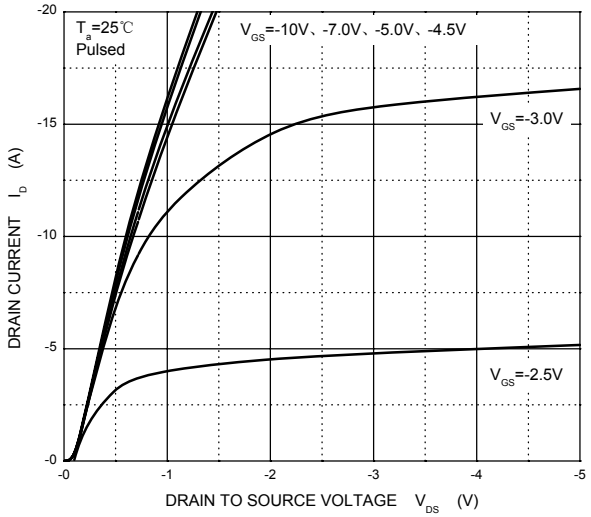

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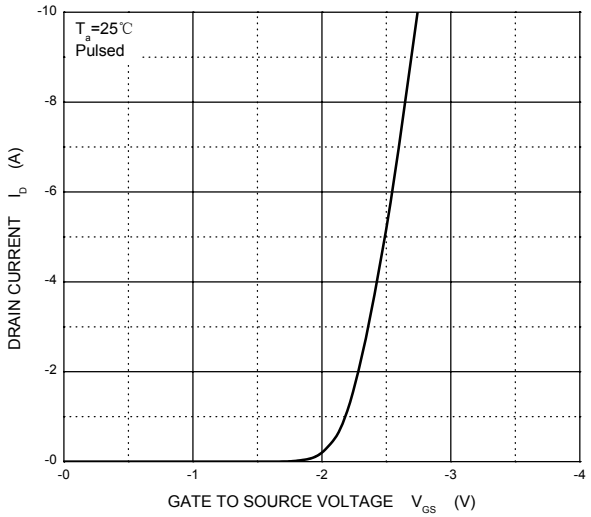
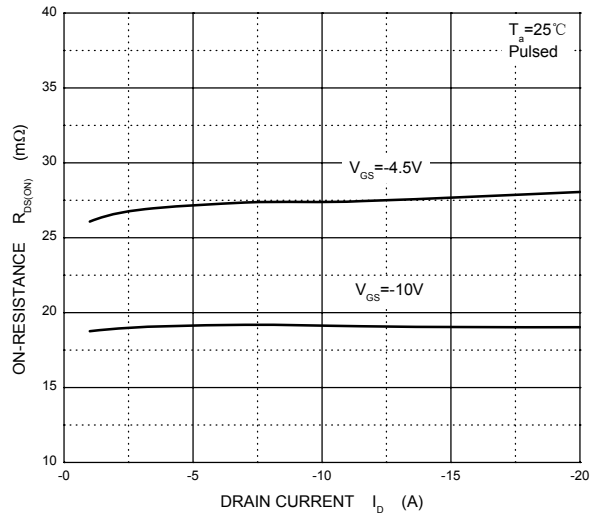
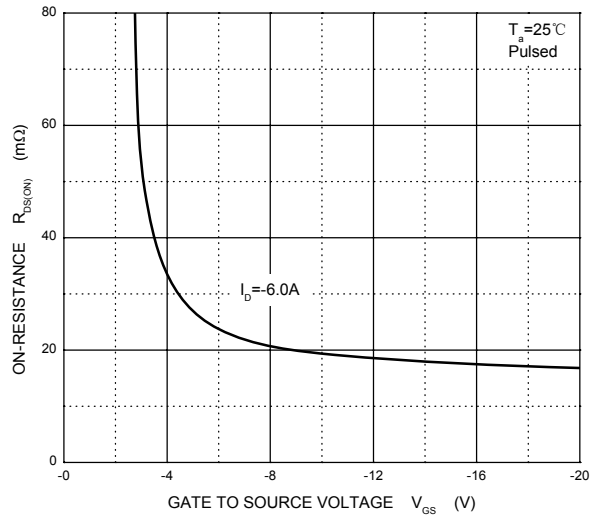


$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}