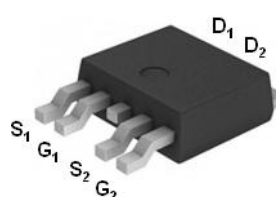


P3004ND5G

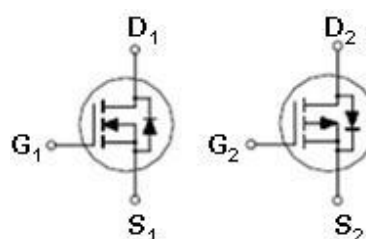
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
40V	$30m\Omega$ @ $V_{GS} = 10V$	12A	N
-40V	$55m\Omega$ @ $V_{GS} = -10V$	-8.8A	P



TO-252- 5



100% Rg tested
100% UIS tested

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V _{DS}	N	40	V
			P	-40	
Gate-Source Voltage		V _{GS}	N	±20	
			P	±20	
Continuous Drain Current	T _C = 25 °C	I _D	N	12	A
			P	-8.8	
	T _C = 70 °C		N	8	
			P	-5.8	
Pulsed Drain Current ¹		I _{DM}	N	50	
			P	-50	
Avalanche Current		I _{AS}	N	19	
			P	-18	
Avalanche Energy	L = 0.1mH	E _{AS}	N	20	mJ
			P	19	
Power Dissipation	T _C = 25 °C	P _D	N	3	W
			P	3	
	T _C = 70 °C		N	2.1	
			P	2.1	
Junction & Storage Temperature Range		T _J , T _{STG}		-55 to 150	°C
Lead Temperature (¹ / ₁₆ " from case for 10 sec.)		T _L		275	

P3004ND5G

N&P-Channel Enhancement Mode MOSFET

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	CHANNEL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$	N & P		6	°C / W
Junction-to-Ambient	$R_{\theta JA}$	N & P		42	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	N	40			V
		$V_{GS} = 0V, I_D = -250\mu A$	P	-40			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	N	1.7	2.0	3.0	
		$V_{DS} = V_{GS}, I_D = -250\mu A$	P	-1.7	-2.0	-3.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	N			± 100	nA
		$V_{DS} = 0V, V_{GS} = \pm 20V$	P			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V$	N			1	μA
		$V_{DS} = -32V, V_{GS} = 0V$	P			-1	
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$	N			10	
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$	P			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	N	50			A
		$V_{DS} = -5V, V_{GS} = -10V$	P	-50			
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 5V, I_D = 6A$	N		39	50	mΩ
		$V_{GS} = -5V, I_D = -4.5A$	P		76	99	
		$V_{GS} = 10V, I_D = 7A$	N		26	30	
		$V_{GS} = -10V, I_D = -5.5A$	P		47	55	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 7A$	N		18		S
		$V_{DS} = -10V, I_D = -5.5A$	P		10		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel $V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$	N		495	643	pF
			P		558	725	
Output Capacitance	C_{oss}		N		110	143	
			P		250	325	
Reverse Transfer Capacitance	C_{rss}	P-Channel $V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	N		41	53	
			P		60	78	

P3004ND5G

N&P-Channel Enhancement Mode MOSFET

DYNAMIC							
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	N		1.8		Ω
			P		7		
Total Gate Charge ²	Q _g	N-Channel V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 7A P-Channel V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = -10V, I _D = -5.5A	N		12		nC
			P		11		
Gate-Source Charge ²	Q _{gs}		N		1.8		
			P		1.7		
Gate-Drain Charge ²	Q _{gd}		N		1.6		
			P		1.5		
Turn-On Delay Time ²	t _{d(on)}	N-Channel V _{DS} = 20V I _D ≅ 1A, V _{GS} = 10V, R _{GEN} = 6Ω P-Channel V _{DS} = -20V I _D ≅ -1A, V _{GS} = -10V, R _{GEN} = 6Ω	N		1.7	3.2	nS
			P		5.4	12	
Rise Time ²	t _r		N		5.6	10	
			P		7.8	16.5	
Turn-Off Delay Time ²	t _{d(off)}		N		7.6	14	
			P		16	30	
Fall Time ²	t _f		N		2.8	5.5	
			P		10	18	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)							
Forward Voltage ¹	V _{SD}	I _F = 7A, V _{GS} = 0V I _F = -5.5A, V _{GS} = 0V	N			1.2	V
			P			-1.2	
Reverse Recovery Time	t _{rr}	I _F = 7A, dl _F /dt = 100A / μS I _F = -5.5A, dl _F /dt = 100A / μS	N		40		nS
			P		50		
Reverse Recovery Charge	Q _{rr}		N		28		nC
			P		50		

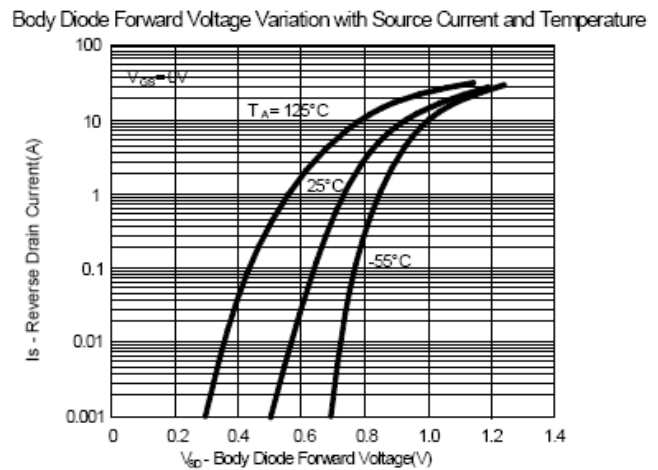
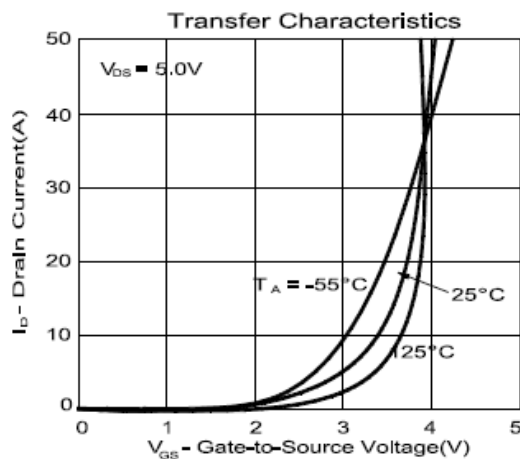
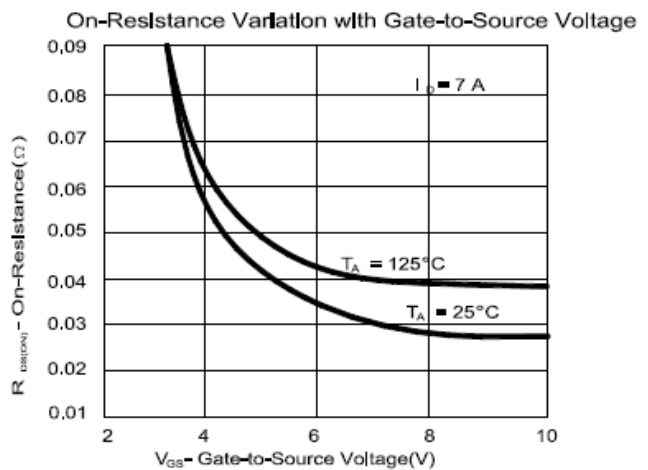
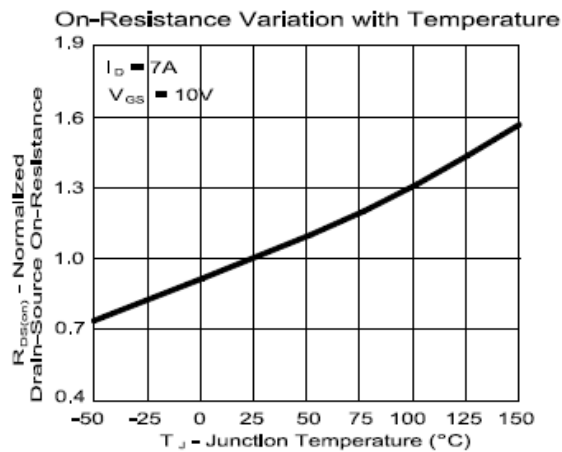
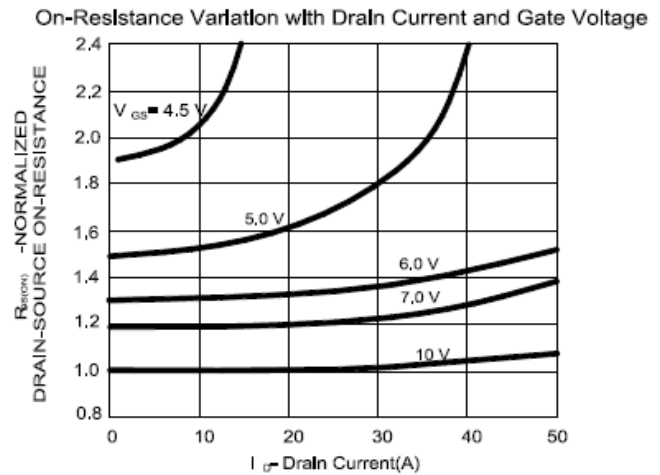
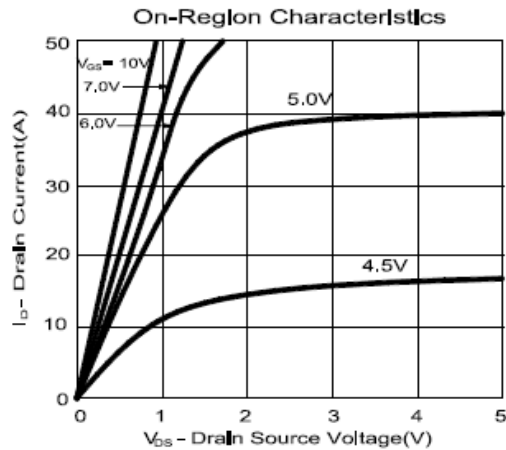
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

P3004ND5G

N&P-Channel Enhancement Mode MOSFET

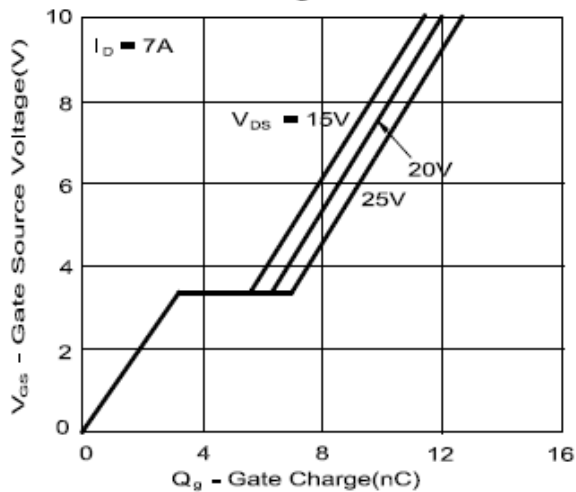
N-CHANNEL



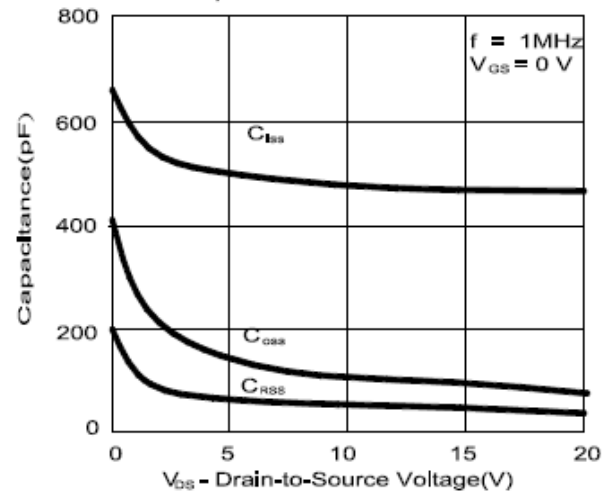
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N&P-Channel Enhancement Mode MOSFET

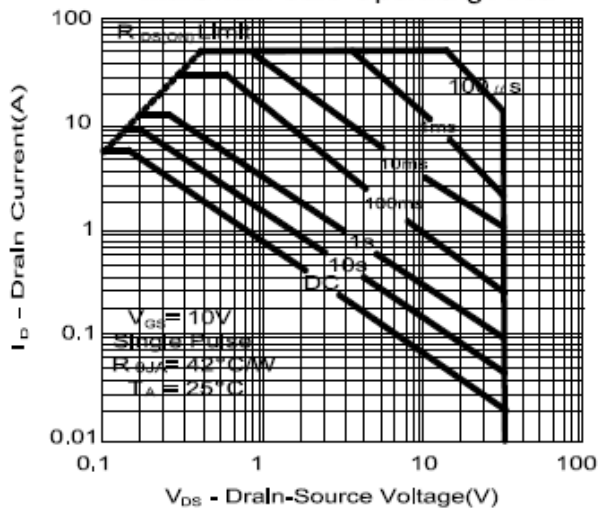
Gate Charge Characteristics



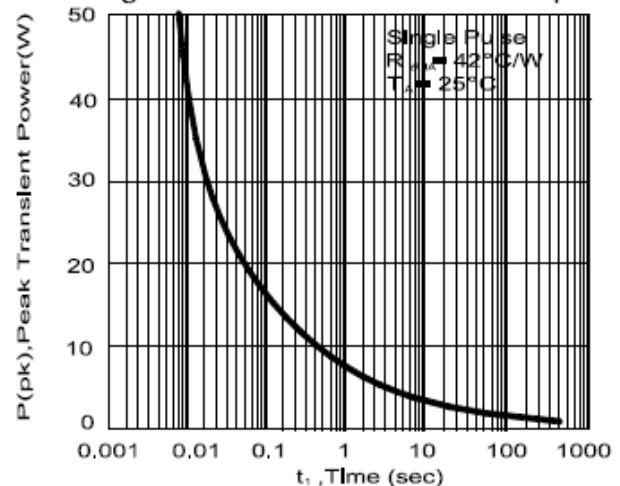
Capacitance Characteristics



Maximum Safe Operating Area



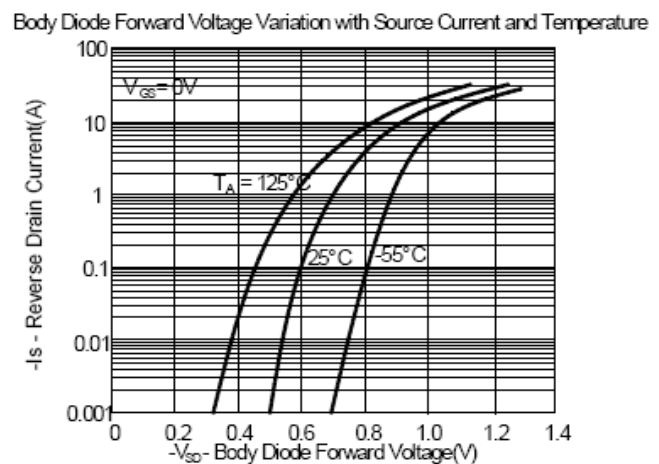
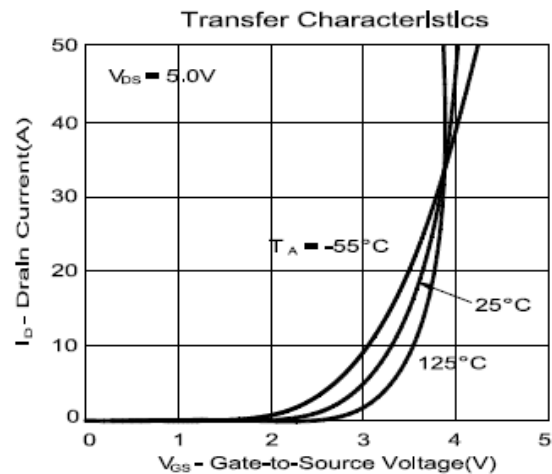
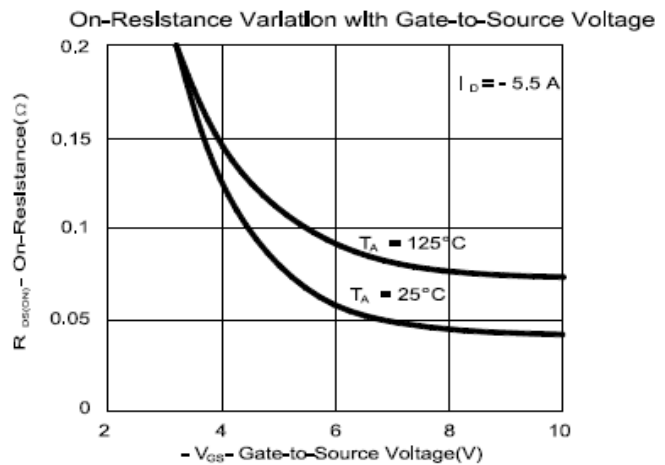
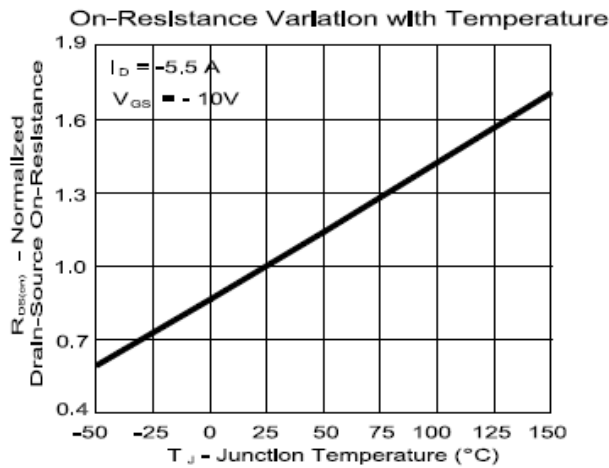
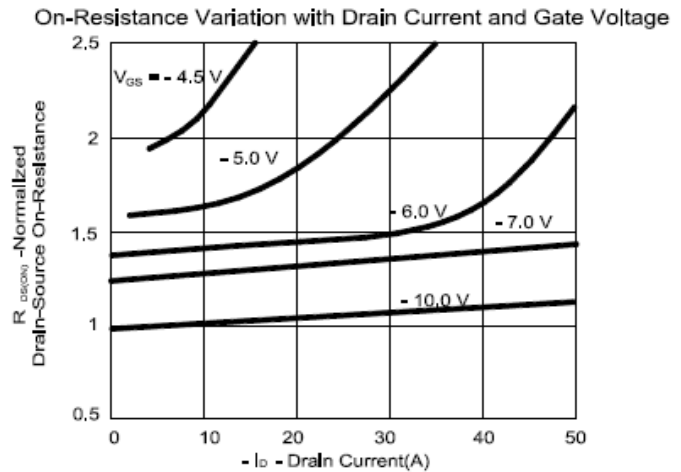
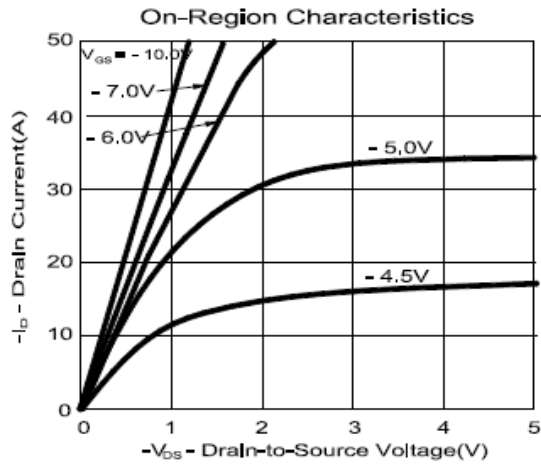
Single Pulse Maximum Power Dissipation



P3004ND5G

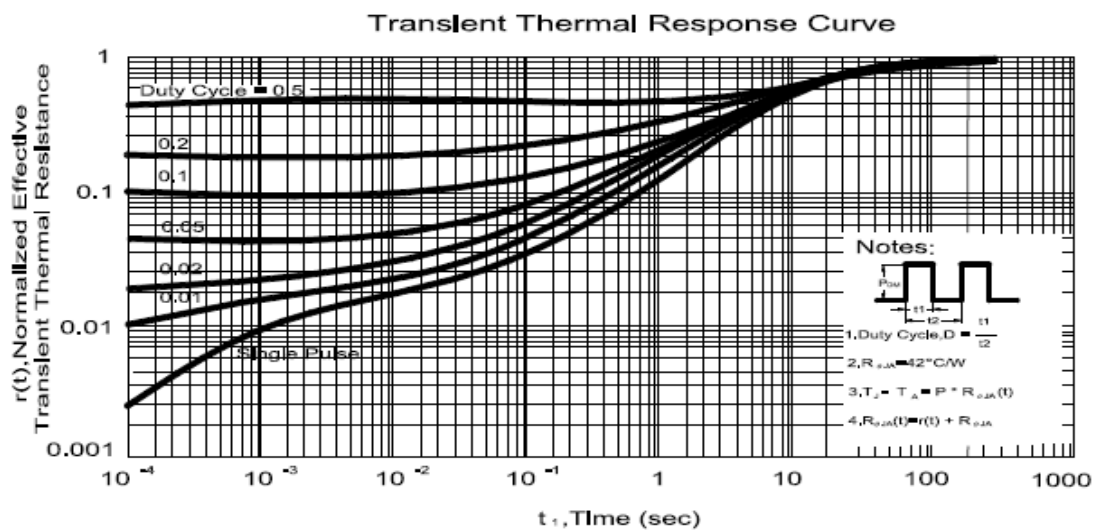
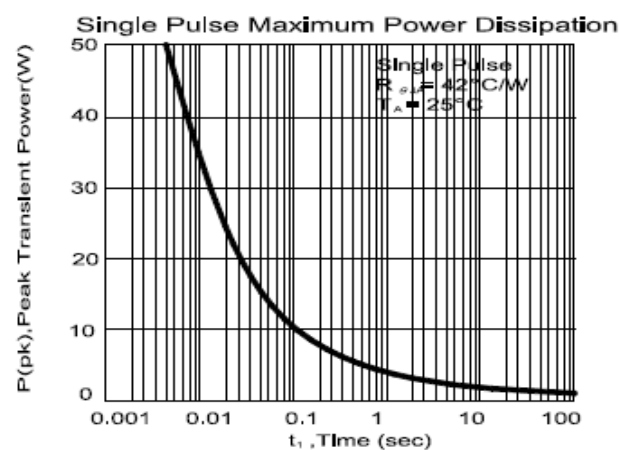
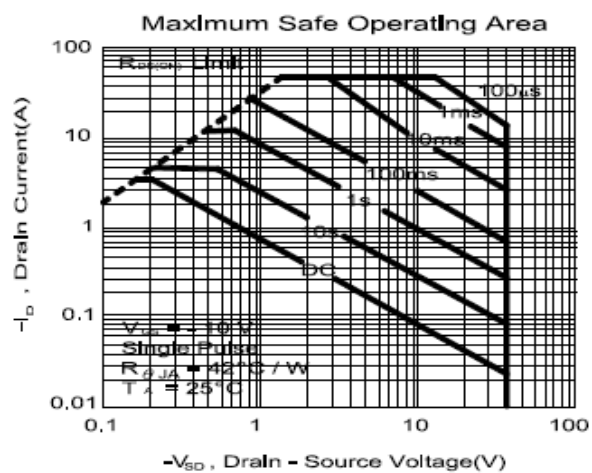
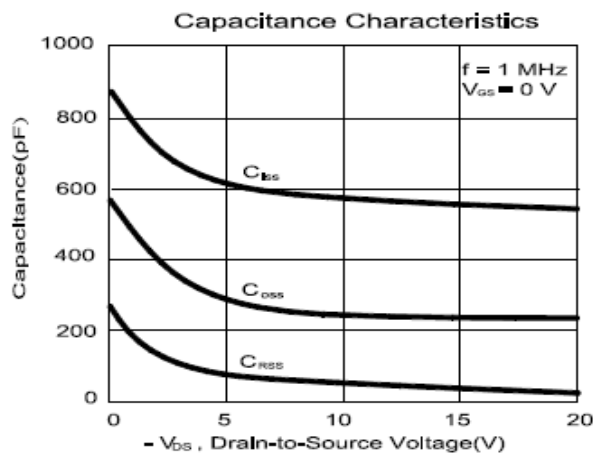
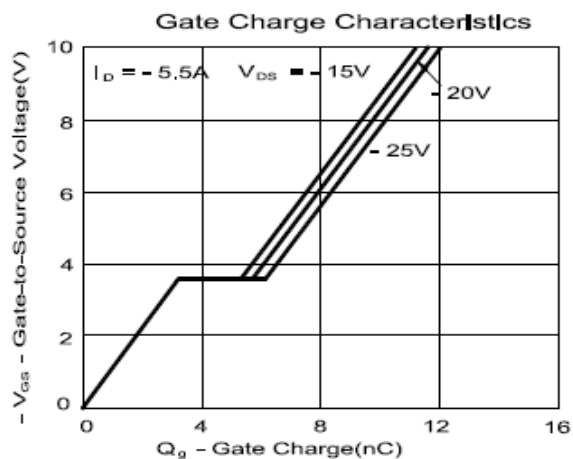
N&P-Channel Enhancement Mode MOSFET

P-CHANNEL



P3004ND5G

N&P-Channel Enhancement Mode MOSFET



P3004ND5G

N&P-Channel Enhancement Mode MOSFET

Package Dimension

TO-252-5 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9	9.5	10.4	J	4.8	5.0	5.5
B	2.1	2.3	2.5	L	0.3	0.56	0.7
C	0.4	0.5	0.6	M	1.1	1.3	1.5
E		0.51		S	4.57	5.0	5.51
F	0	0.1	0.3	T	3.81	5.0	5.0
G	5.3	6.1	6.22	U	1.4	1.5	1.77
H	0.89	1.1	1.7	V	0.55	1.2	1.5
I	6.5	6.6	6.8				

