



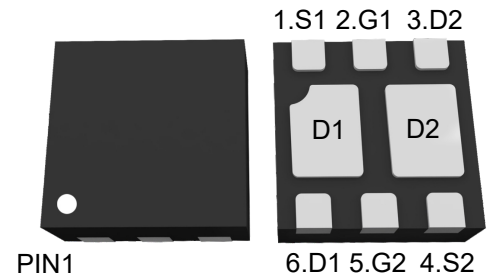
TN05DP20DFA

Dual P-Channel Enhancement Mode Power MOSFET

Features

- Low gate charge
- High density cell design for ultra low $R_{DS(on)}$
- $V_{DS} = -20V, I_D = -4.5A$
 $R_{DS(on)} < 45m\Omega @ V_{GS} = -4.5V$

DFN2x2A-6L

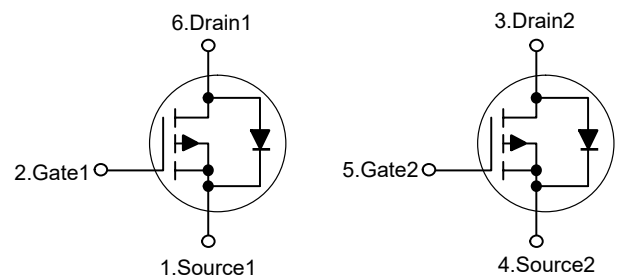


Marking Code: 05DP20

Applications

- PWM applications
- Load switch
- Power management

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	$-I_D$	4.5	A
Maximum Power Dissipation	P_D	1.4	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note1}	$R_{\theta JA}$	89	°C/W
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N-Channel

Electrical Characteristics

($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	20	--	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$-V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	0.5	0.7	0.9	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-3A$	--	--	45	m Ω
		$V_{GS}=-2.5V, I_D=-2A$	--	--	70	m Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=-5V, I_D=-4.1A$	--	6	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-4V, V_{GS}=0V, f=1MHz$	--	740	--	pF
Output Capacitance	C_{oss}		--	290	--	pF
Reverse Transfer Capacitance	C_{rss}		--	190	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-4V, R_L=1.2\Omega$ $V_{GS}=-4.5V, R_{GEN}=1\Omega$	--	12	--	nS
Turn-on Rise Time	t_r		--	35	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	30	--	nS
Turn-off Fall Time	t_f		--	10	--	nS
Total Gate Charge	Q_g	$V_{DS}=-4V, I_D=-4.1A,$ $V_{GS}=-4.5V$	--	7.8	--	nC
Gate-Source Charge	Q_{gs}		--	1.2	--	nC
Gate-Drain Charge	Q_{gd}		--	1.6	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	$-V_{SD}$	$V_{GS}=0V, I_S=-4.1A$	--	--	1.2	V
Diode Forward Current ^{Note2}	$-I_S$		--	--	4.5	A

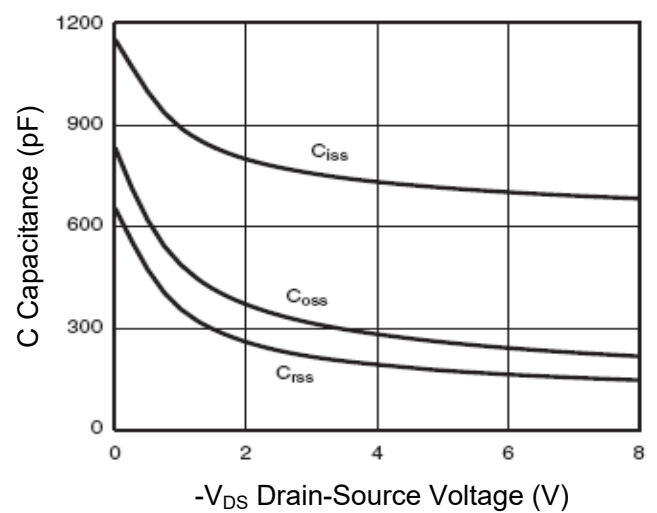
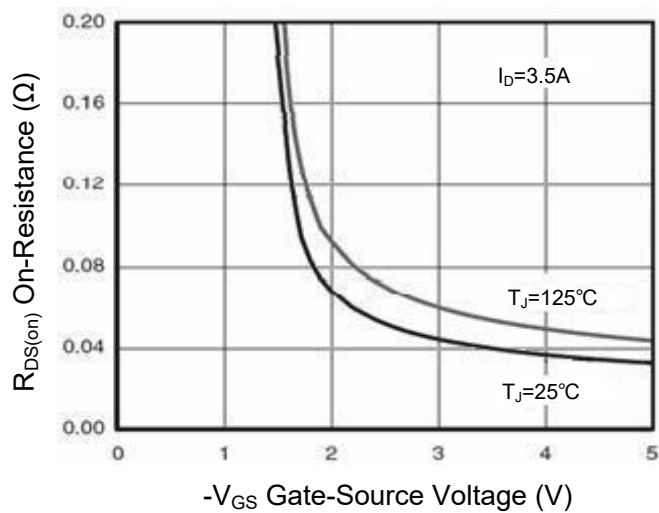
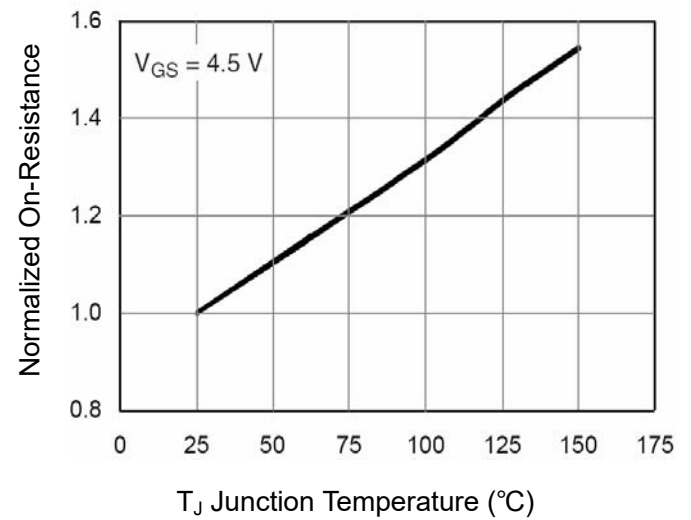
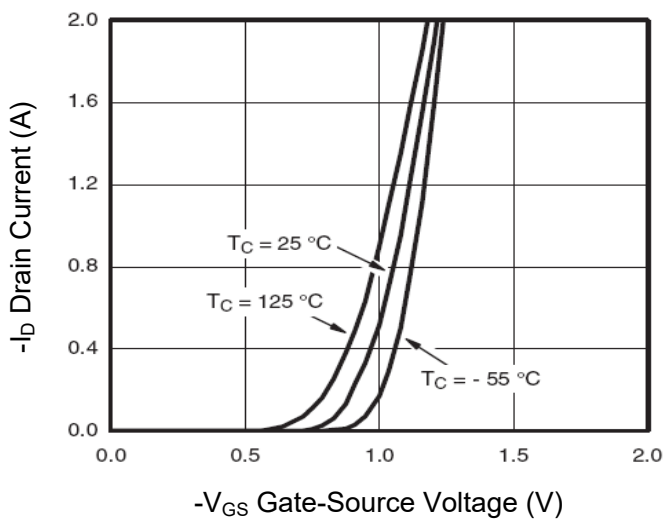
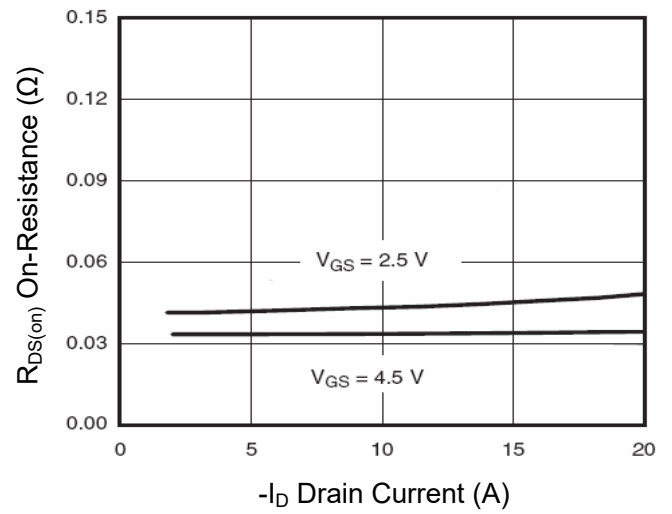
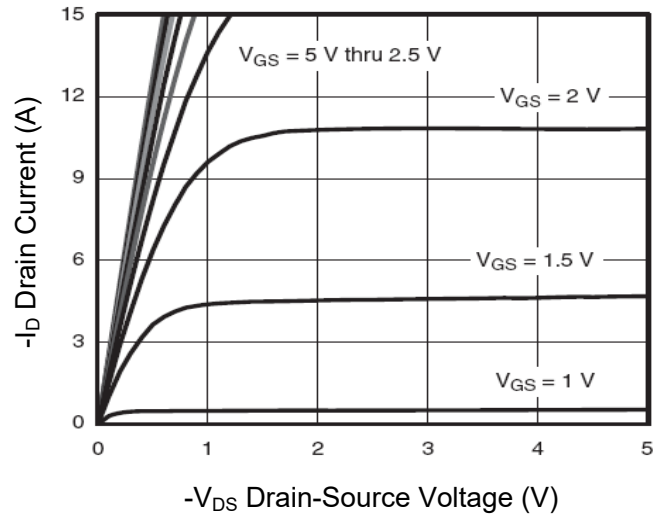
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.



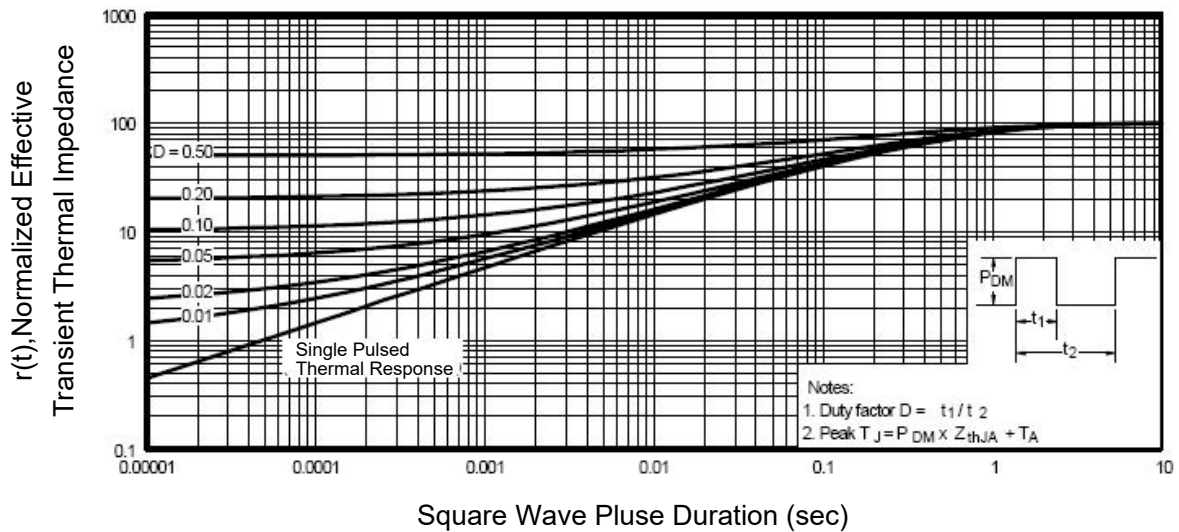
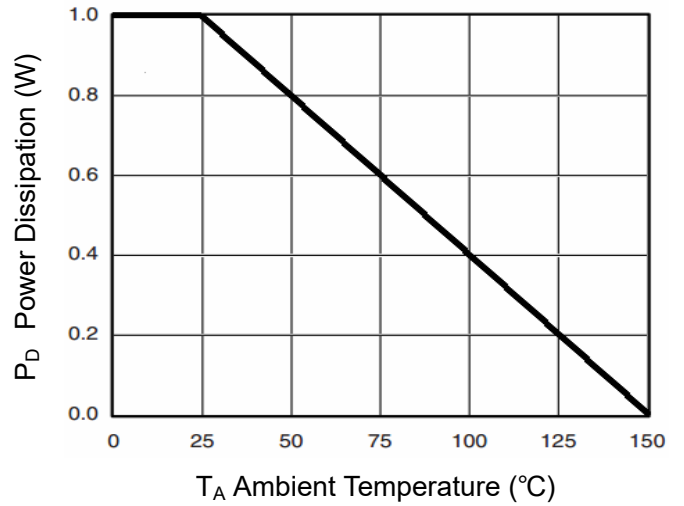
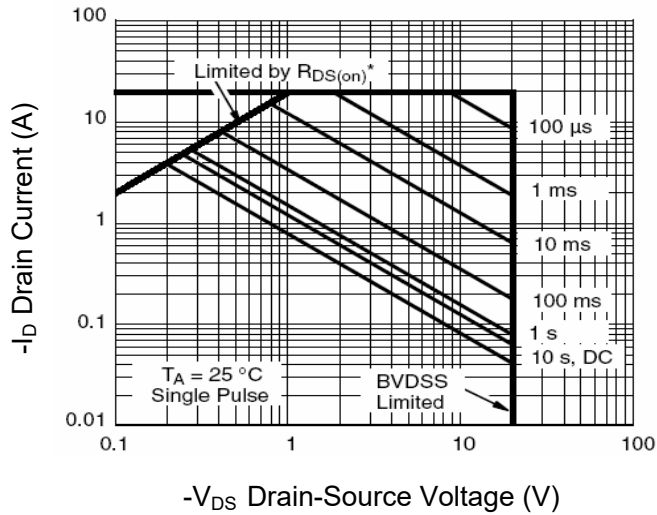
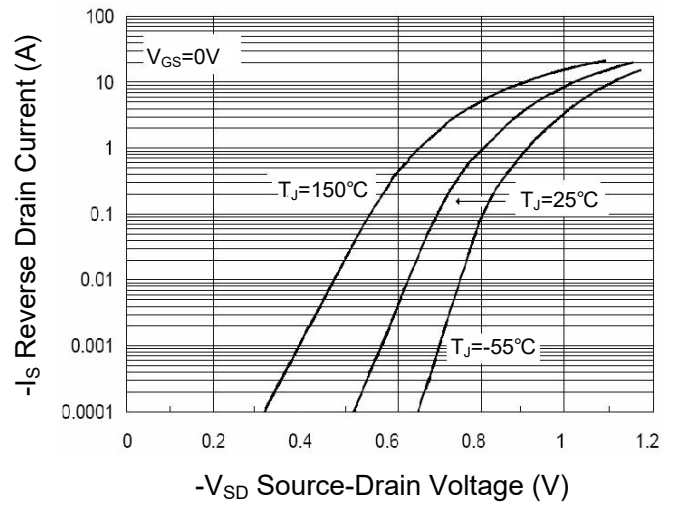
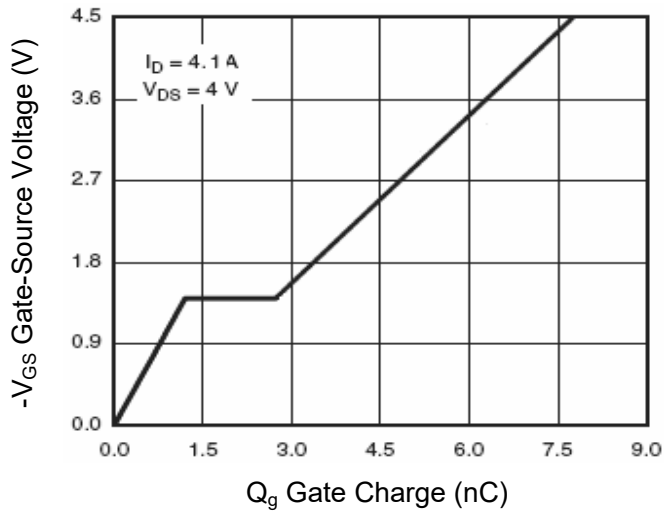
Typical Characteristic Curves





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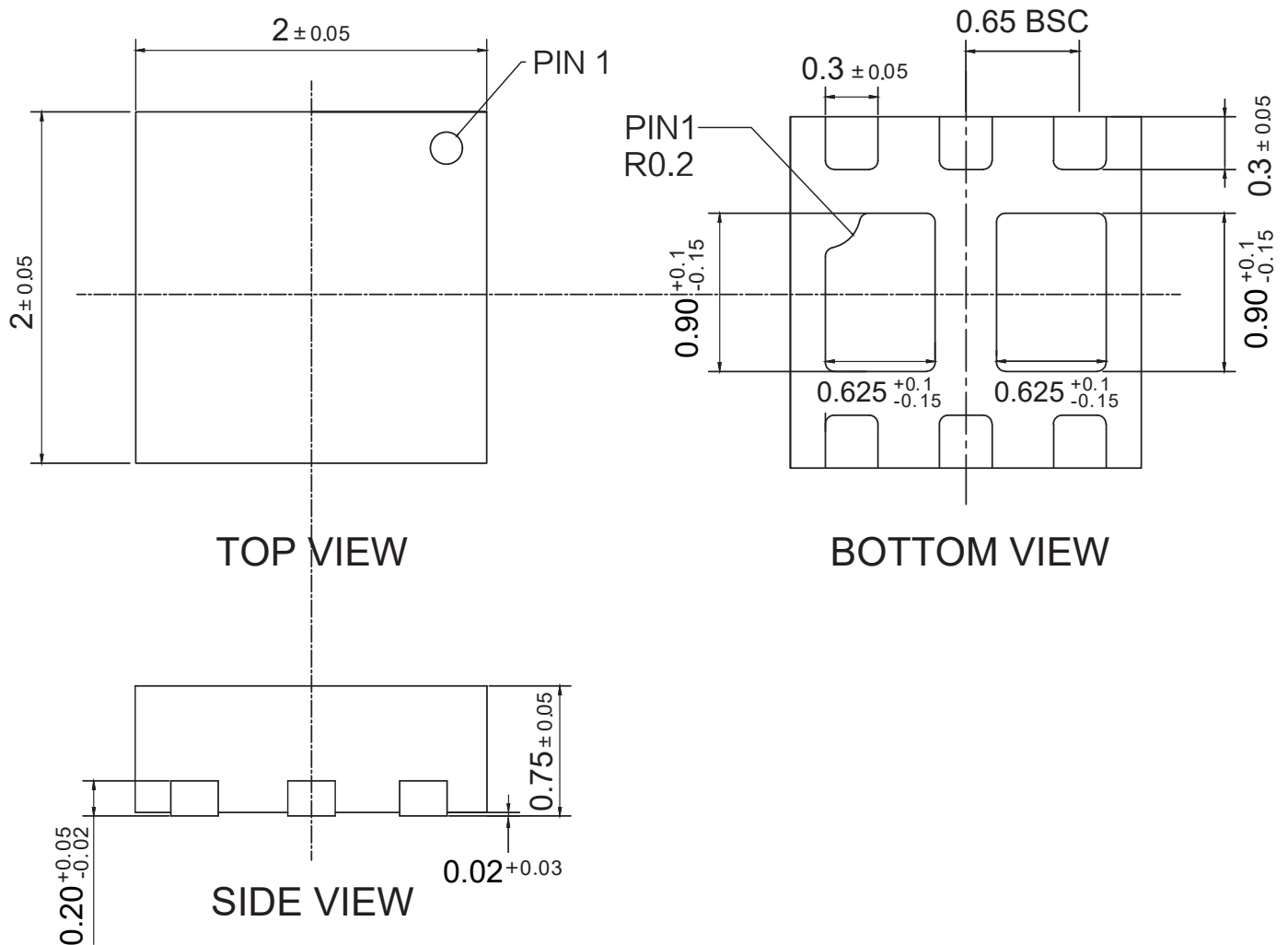
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Package Outline

DFN2x2-6L-0002

Dimensions in mm



Ordering Information

Device	Package	Shipping
TN05DP20DFA	DFN2x2A-6L	3,000PCS/Reel&7inches



Contact Information

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For additional information, please contact your local Sales Representative.

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