

VN0300 SERIES

N-Channel Enhancement-Mode MOS Transistors

352-688

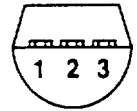
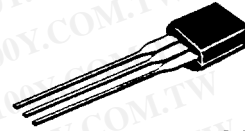


PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN0300L	30	1.2	0.64	TO-92
VN0300M	30	1.2	0.67	TO-237

TO-92 (TO-226AA)

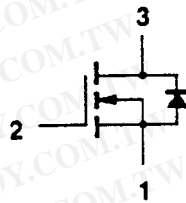
BOTTOM VIEW



- 1 SOURCE
- 2 GATE
- 3 DRAIN

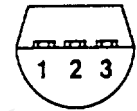
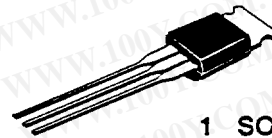
Performance Curves: VNDQ03

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



TO-237

BOTTOM VIEW



- 1 SOURCE
- 2 GATE
- 3 & TAB-DRAIN

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

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS		UNITS	
		VN0300L	VN0300M		
Drain-Source Voltage	V_{DS}	30	30	V	
Gate-Source Voltage	V_{GS}	± 30	± 30		
Continuous Drain Current	I_D	$T_A = 25^\circ\text{C}$	0.64	0.67	A
		$T_A = 100^\circ\text{C}$	0.38	0.43	
Pulsed Drain Current ¹	I_{DM}	3	3		
Power Dissipation	P_D	$T_A = 25^\circ\text{C}$	0.8	1	W
		$T_A = 100^\circ\text{C}$	0.32	0.4	
Operating Junction & Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	
Lead Temperature ($1/16"$ from case for 10 sec.)	T_L	300			

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	LIMITS		UNITS
		VN0300L	VN0300M	
Junction-to-Ambient	R_{thJA}	156	125	K/W

¹Pulse width limited by maximum junction temperature

SPECIFICATIONS ^a				LIMITS			
PARAMETER	SYMBOL	TEST CONDITIONS	TYP ^b	MIN	MAX	UNIT	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 10 \mu A, V_{GS} = 0 V$	65	30		V	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1 mA$	1.5	0.8	2.5		
Gate-Body Leakage	I_{GSS}	$V_{GS} = \pm 30 V, V_{DS} = 0 V$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30 V, V_{GS} = 0 V$ $T_J = 125^\circ C$			10 500	μA	
On-State Drain Current ^c	$I_{D(ON)}$	$V_{DS} = 10 V, V_{GS} = 10 V$	3	1		A	
Drain-Source On-Resistance ^c	$r_{DS(ON)}$	$V_{GS} = 5 V, I_D = 0.3 A$	1.4		3.3	Ω	
		$V_{GS} = 5 V, I_D = 1 A$	0.85		1.2		
		$T_J = 125^\circ C$	1.8		2.40		
Forward Transconductance ^c	g_{FS}	$V_{DS} = 10 V, I_D = 0.5 A$	500	200		mS	
Common Source Output Conductance ^c	g_{OS}	$V_{DS} = 10 V, I_D = 0.1 A$	1500			μS	
DYNAMIC							
Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V$ $f = 1 MHz$	38		100	pF	
Output Capacitance	C_{oss}		28		95		
Reverse Transfer Capacitance	C_{rss}		8		25		
SWITCHING							
Turn-On Time	t_{ON}	$V_{DD} = 25 V, R_L = 24 \Omega, I_D = 1 A$ $V_{GEN} = 10 V, R_G = 25 \Omega$	9		30	ns	
Turn-Off Time	t_{OFF}	(Switching time is essentially independent of operating temperature)	13		30		

NOTES.

- a. $T_A = 25^\circ C$ unless otherwise noted.
- b. For design aid only, not subject to production testing.
- c. Pulse test; $PW = \leq 300 \mu S$, duty cycle $\leq 2\%$.

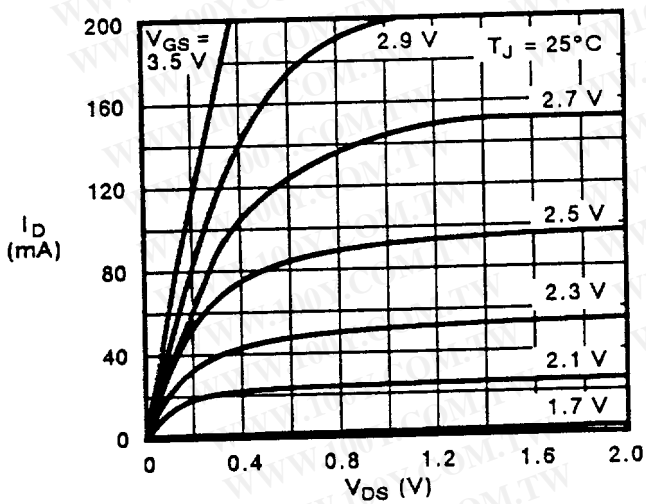


VNDQ03 N-Channel Enhancement-Mode MOSFETs

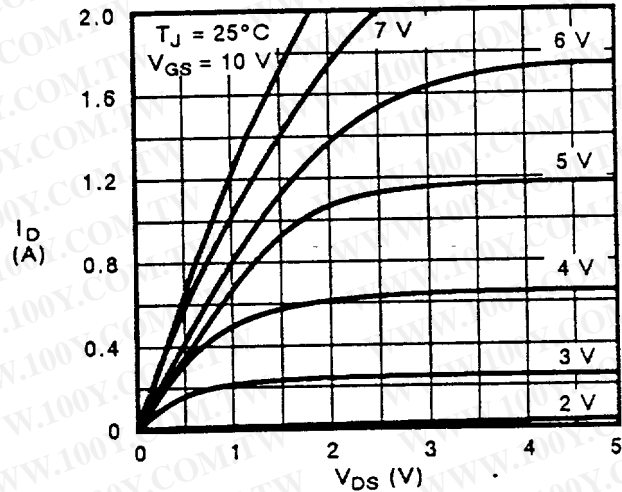
TYPE	PACKAGE	DEVICE
Single	TO-92 (TO-226AA)	• VN0300L, TN0201L, TN0401L
Single	TO-237	• VN0300M
Single	14-Pin Plastic	• VQ1001J
Quad	14-Pin Dual-In-Line	• VQ1001P
Quad	Chip	• Available as VNDQ1CHP

TYPICAL CHARACTERISTICS

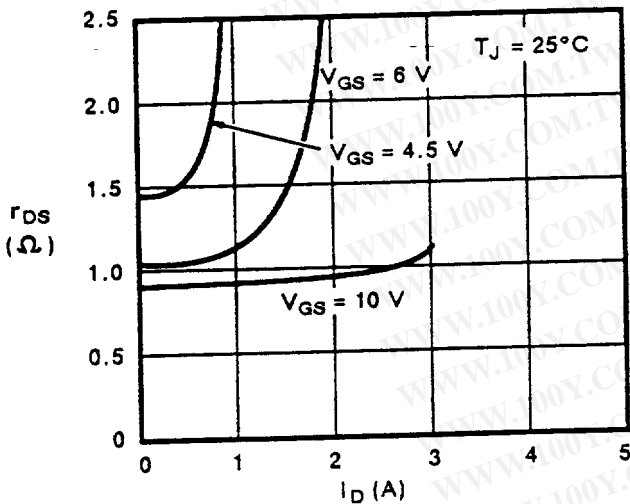
Output Characteristics for Low Gate Drive



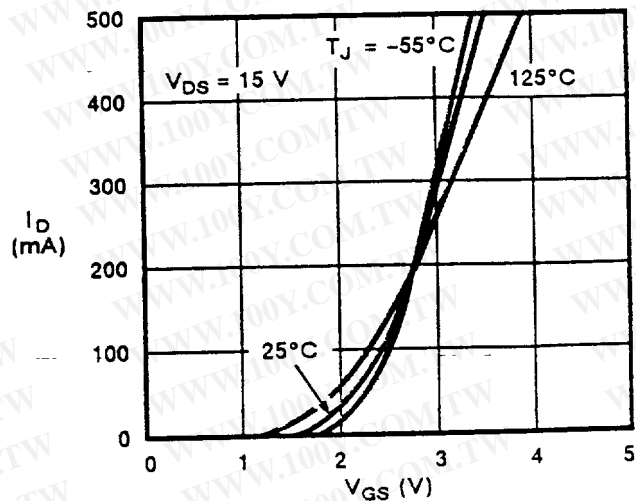
Ohmic Region Characteristics



On-Resistance

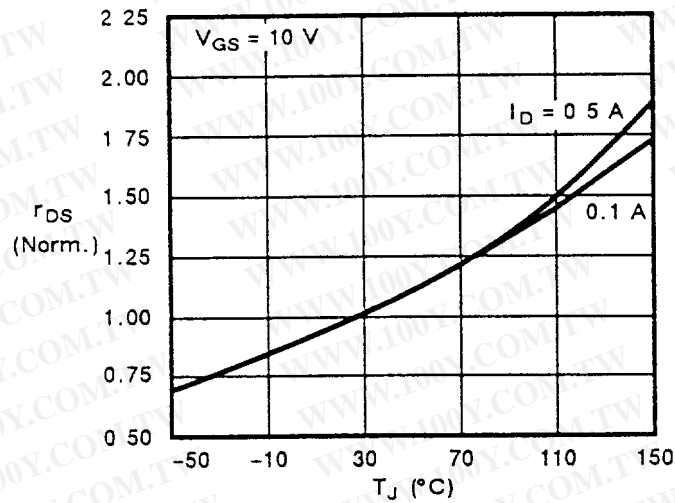


Transfer Characteristics

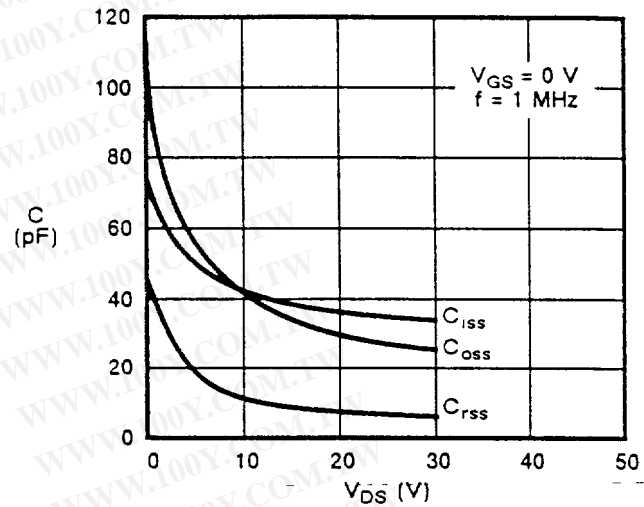


TYPICAL CHARACTERISTICS (Cont'd)

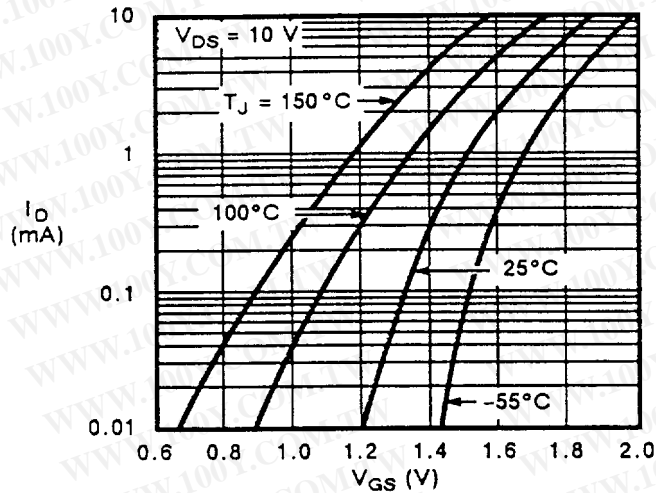
Normalized On-Resistance vs. Junction Temperature



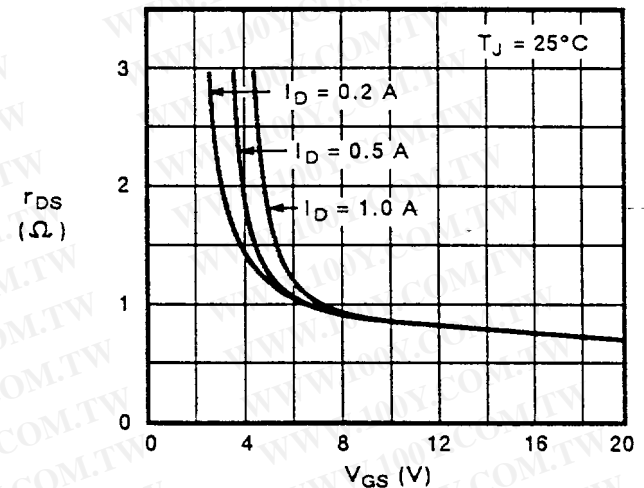
Capacitance



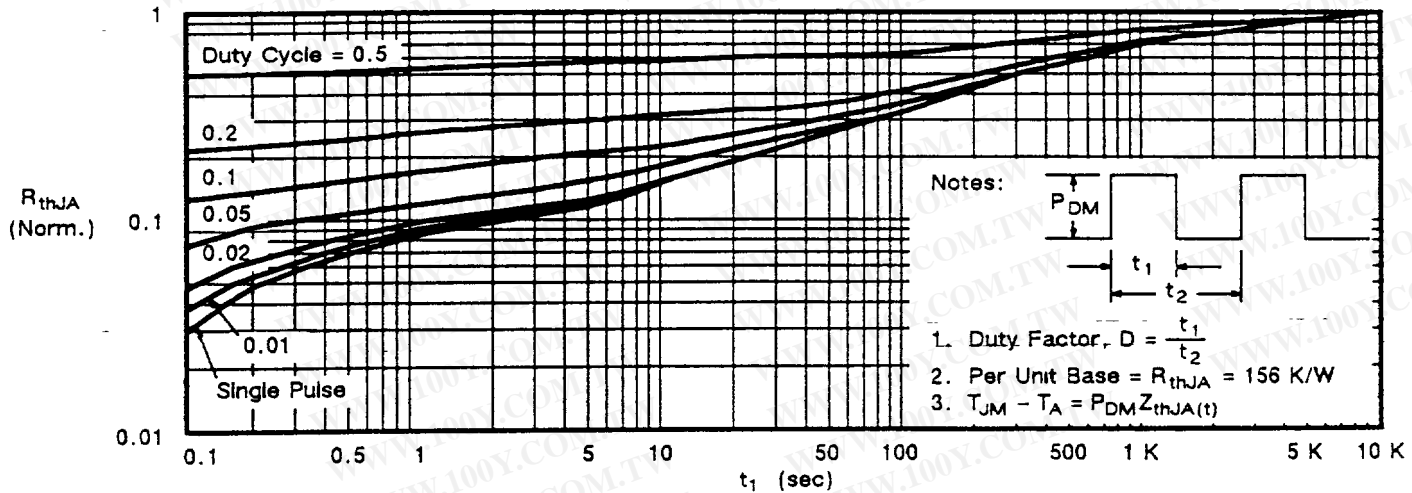
Threshold Region



On-Resistance vs. Gate to Source Voltage

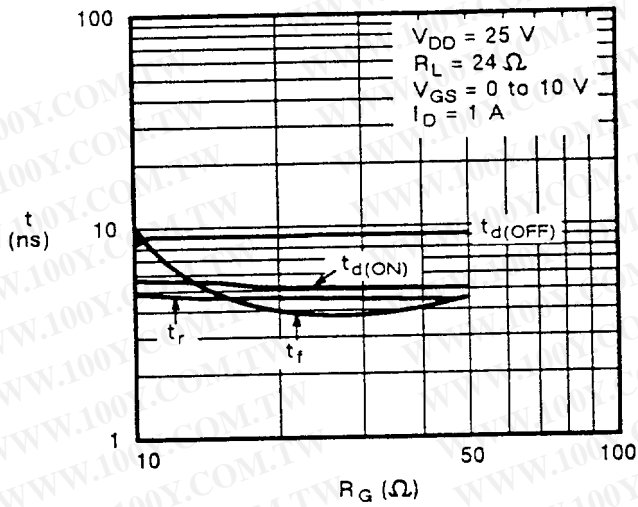


Normalized Effective Transient Thermal Impedance, Junction-to-Ambient (TO-92)

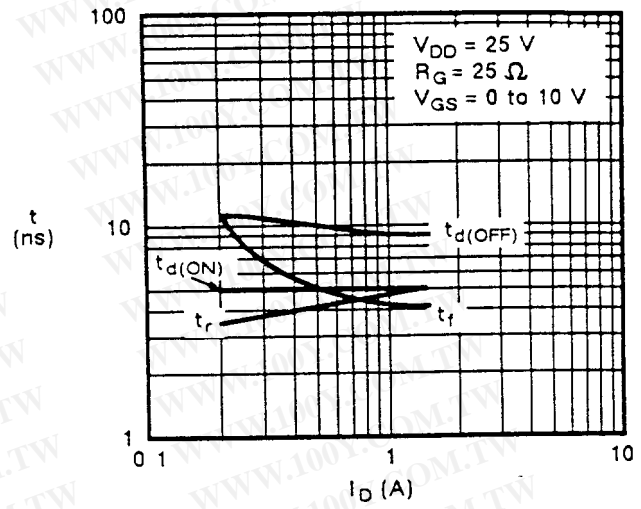


TYPICAL CHARACTERISTICS (Cont'd)

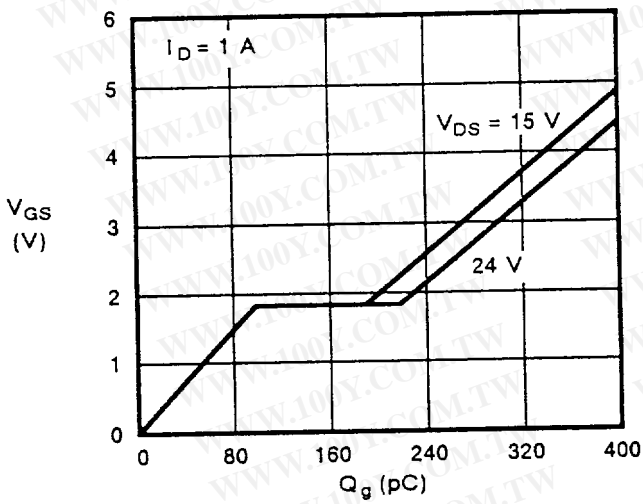
Drive Resistance Effects on Switching



Load Condition Effects on Switching



Gate Charge



Transconductance

