P-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Low gate charge

1.2 Applications

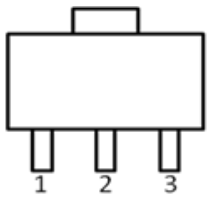
- ☑ Motor driver appliances
- ☑ Adapter appliances
- ☑ High power inverter system

1.3 Quick reference

- ☑ BV ≧ - 30 V
- ☑ P_{tot} ≦ 2 W
- ☑ I_D ≦ - 8 A
- ☑ $R_{DS(ON)}$ ≦ 50 mΩ @ V_{GS} = - 10 V
- ☑ $R_{DS(ON)}$ ≦ 78 mΩ @ V_{GS} = - 4.5 V

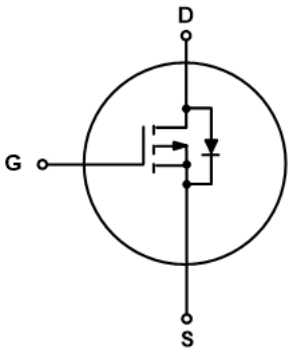
2. Pin Description

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)



Top View

SOT-89



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A = 25 ℃	- 30	-	V
V_{GS}	Gate-Source Voltage	T_A = 25 ℃	-	± 20	V
I_D*	Drain Current (DC)	T_A = 25 ℃, V_{GS} = - 10 V	-	- 8	A
		T_A = 100 ℃, V_{GS} = - 10 V		-4.5	A
I_{DM}*,**	Drain Current (Pulsed)	T_A = 25 ℃, V_{GS} = - 10 V	-	- 22.4	A
P_{tot}*	Total Power Dissipation	T_A = 25 ℃	-	2	W
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		-	150	℃
$R_{\theta JC}$*	Thermal Resistance- Junction to Case		-	3.5	℃ / W
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	62.5	℃ / W

Notes：

* Surface Mounted on 1 in^2 pad area, $t \leq 10$ sec

** Pulse width $\leq$ 300 μs, duty cycle $\leq$ 2 %

*** limited by bonding wire

4. Marking Information

Product Name	Marking
N08P03S	**08P03** **YWWXXX** **YWW: Date Code**

5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
N08P03S	**SOT89**			**800**	

6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = - 250 µA	- 30	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = - 250 µA	- 1	-	- 3	V
I_{DSS}	Drain Leakage Current	V_{DS} = - 30 V, V_{GS} = 0 V	-	-	- 1	µA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 20 V, V_{DS} = 0 V	-	-	± 100	nA
$R_{DS(ON)}$[a]	Channel On-State Resistance	V_{GS} = - 10 V, I_D = - 5 A	-	50	-	mΩ
	Channel On-State Resistance	V_{GS} = - 4.5 V, I_D = - 3 A	-	75	-	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = - 5 A, V_{GS} = 0 V	-	-	- 1.3	V
t_{rr}	Reverse Recovery Time	I_{SD} = - 5 A, dI_{SD} / dt = 100 A / µs	-	13	-	nS
Q_{rr}	Reverse Recovery Charge		-	9.1	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = - 20 V Frequency = 1 MHz	-	1178	-	pF
C_{oss}	Output Capacitance		-	79	-	
C_{rss}	Reverse Transfer Capacitance		-	66	-	
t_d(on)	Turn-on Delay Time	V_{DS} = - 20 V, V_{GEN} = - 10 V, R_G = 3.9 Ω, R_L = 4 Ω, I_{DS} = - 5 A	-	17	-	nS
t_r	Turn-on Rise Time		-	29	-	
t_d(off)	Turn-off Delay Time		-	123	-	
t_f	Turn-off Fall Time		-	55	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{GS} = - 10 V, V_{DS} = - 20 V, I_{DS} = - 5 A	-	21	-	nC
Q_{gs}	Gate-Source Charge		-	6.1	-	
Q_{gd}	Gate-Drain Charge		-	2.4	-	

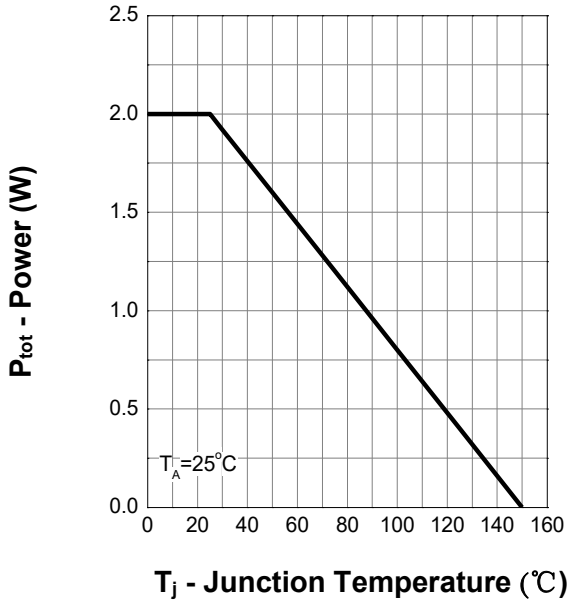
Notes :

a : Pulse test ; pulse width ≤ 300 µs, duty cycle ≤ 2 %

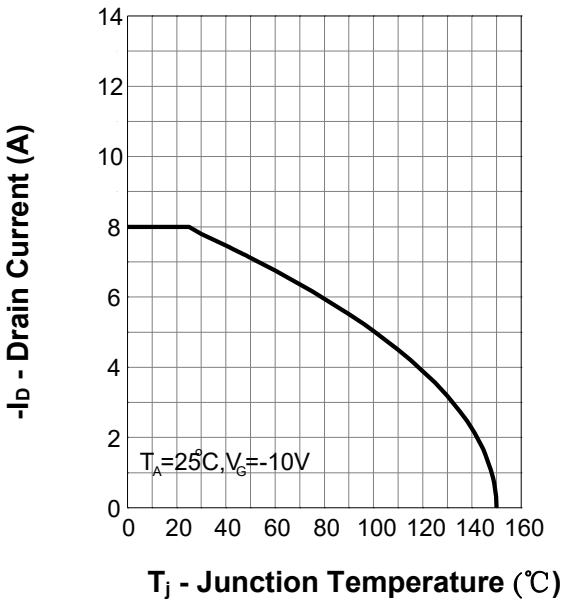
b : Guaranteed by design, not subject to production testing

7. Typical Characteristics

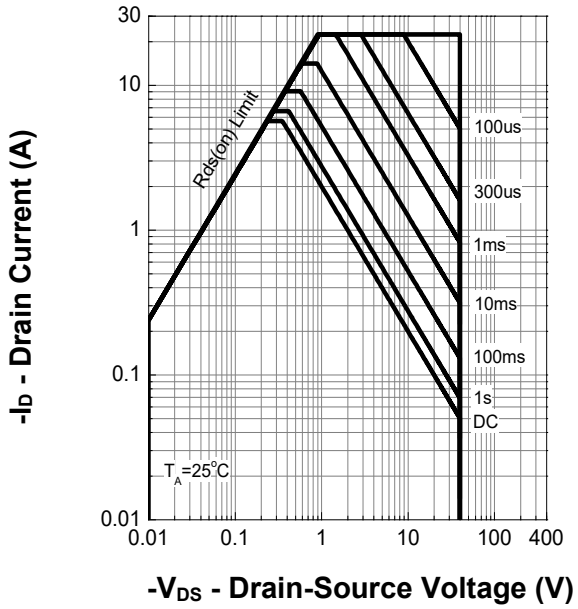
Power Dissipation



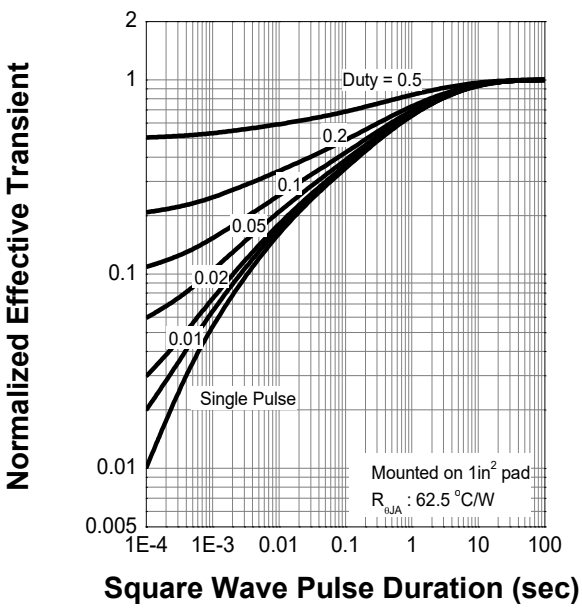
Drain Current



Safe Operation Area

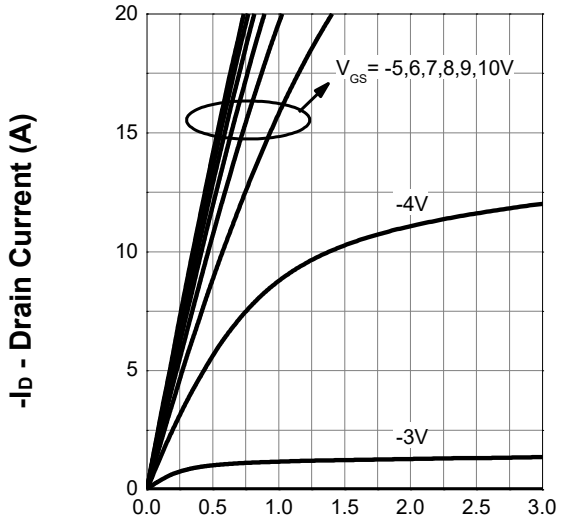


Thermal Transient Impedance

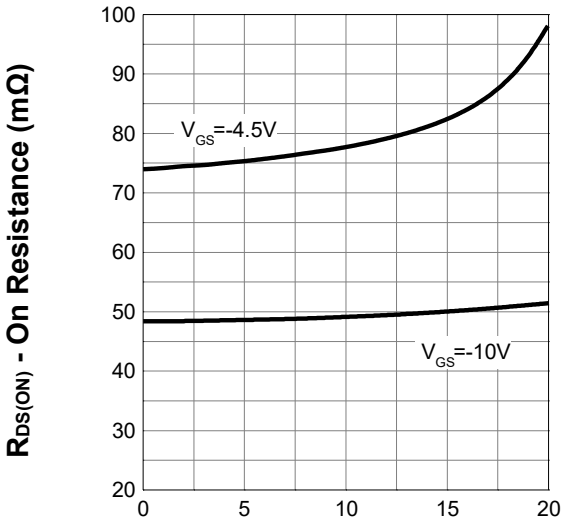


7. Typical Characteristics (cont.)

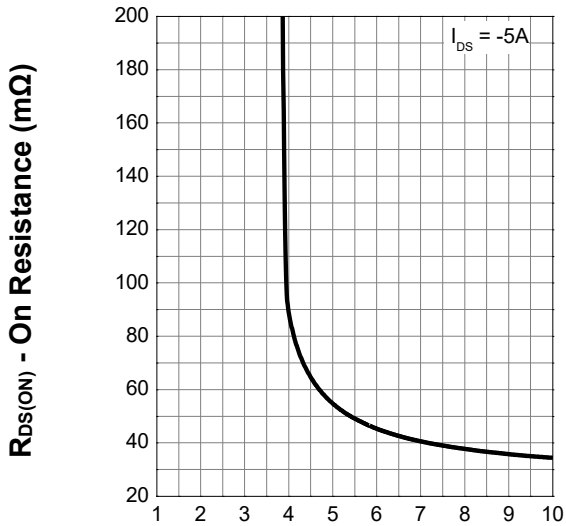
Output Characteristics



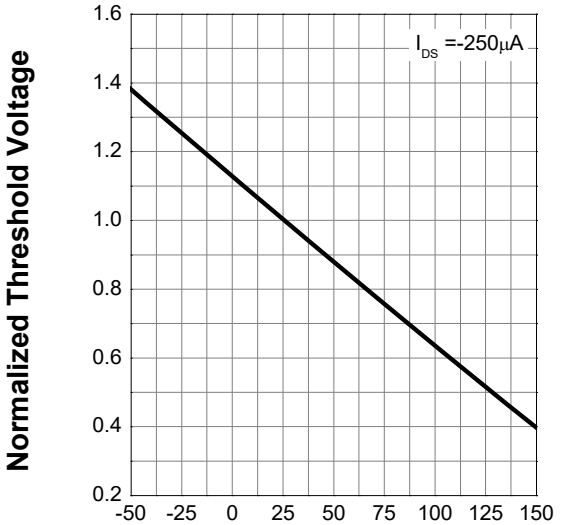
Drain-Source On Resistance



Transfer Characteristics

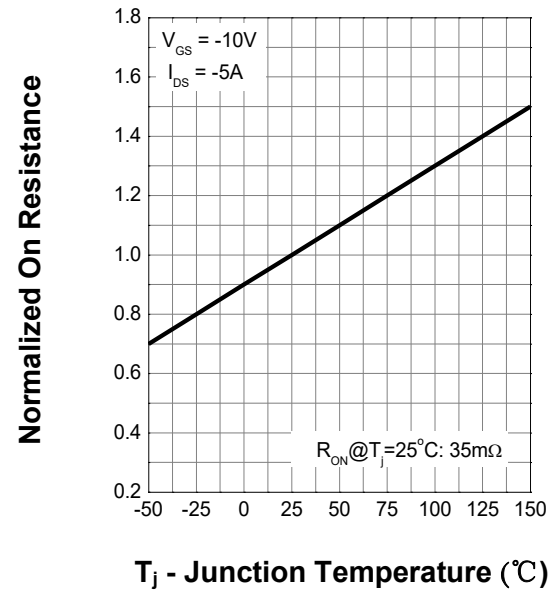


Gate Threshold Voltage

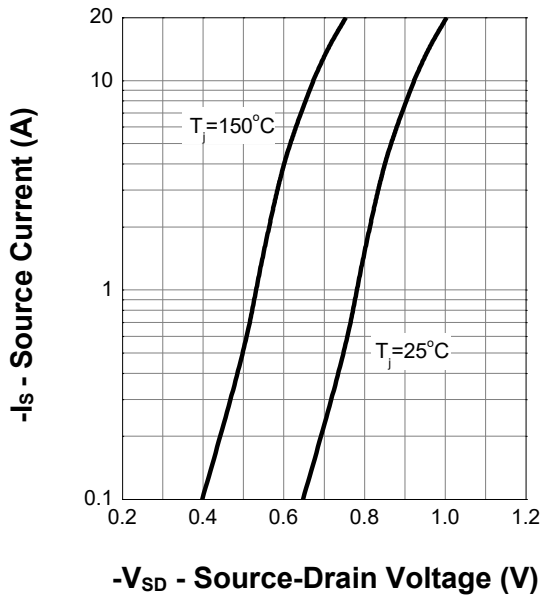


7. Typical Characteristics (cont.)

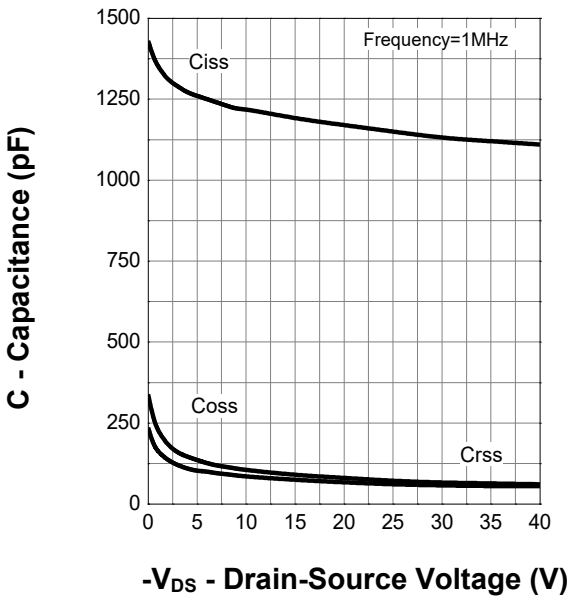
Drain-Source On Resistance



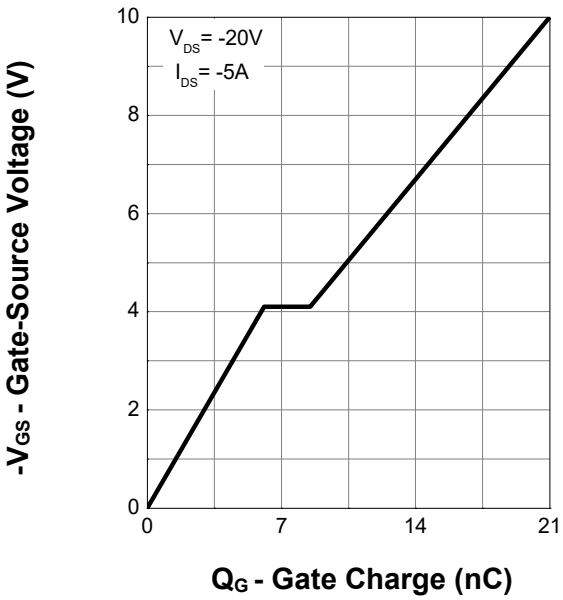
Source-Drain Diode Forward



Capacitance

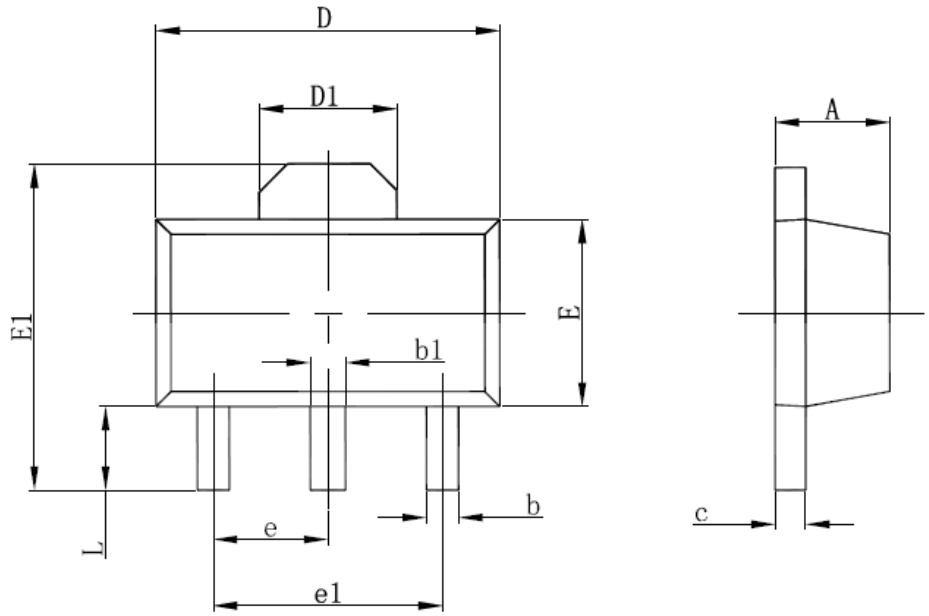


Gate Charge



8.Package Dimensions

SOT89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047