

NP100N055PUK

R07DS0589EJ0200

Rev.2.00

MOS FIELD EFFECT TRANSISTOR

May 24, 2018

Description

The NP100N055PUK is N-channel MOS Field Effect Transistor designed for high current switching applications.

Features

- Super low on-state resistance
 $R_{DS(on)} = 3.25 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 50 \text{ A)}$
- Low C_{iss} : $C_{iss} = 4900 \text{ pF TYP. (} V_{DS} = 25 \text{ V)}$
- Designed for automotive application and AEC-Q101 qualified

Ordering Information

Part No.	Lead Plating	Packing		Package
NP100N055PUK-E1-AY *1	Pure Sn (Tin)	Tape 800 p/reel	Taping (E1 type)	TO-263 (MP-25ZP)
NP100N055PUK-E2-AY *1			Taping (E2 type)	

Note: *1 Pb-free (This product does not contain Pb in the external electrode)

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	55	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 20	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	± 100	A
Drain Current (pulse) *1, 3	$I_{D(pulse)}$	± 400	A
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_{T1}	176	W
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	P_{T2}	1.8	W
Channel Temperature	T_{ch}	175	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to 175	$^\circ\text{C}$
Repetitive Avalanche Current *2, 3	I_{AR}	38	A
Repetitive Avalanche Energy *2, 3	E_{AR}	144	mJ

Thermal Resistance

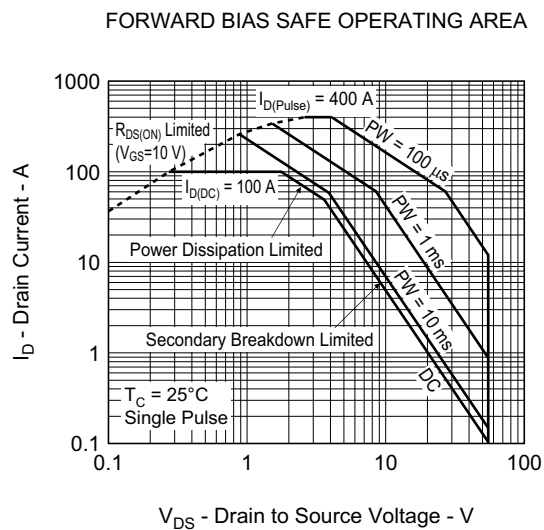
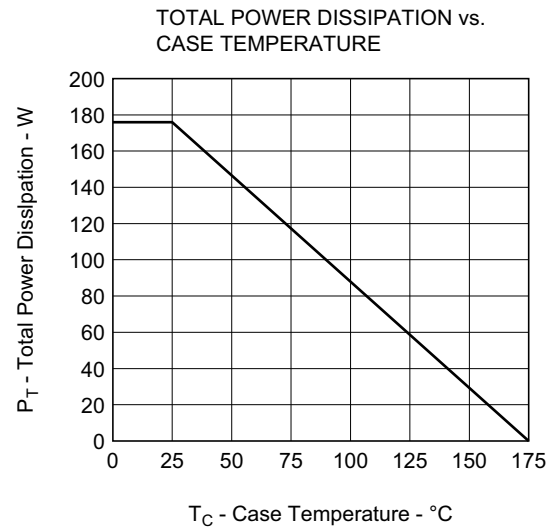
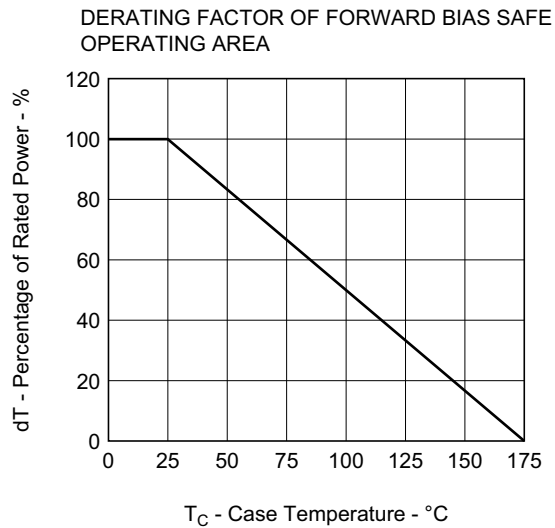
Channel to Case Thermal Resistance	$R_{th(ch-C)} *3$	0.85	$^\circ\text{C/W}$
Channel to Ambient Thermal Resistance	$R_{th(ch-A)} *3$	83.3	$^\circ\text{C/W}$

Notes: *1 $T_C = 25^\circ\text{C}$, $P_W \leq 10 \text{ }\mu\text{s}$, Duty Cycle $\leq 1\%$

*2 $R_G = 25 \text{ }\Omega$, $V_{GS} = 20 \rightarrow 0 \text{ V}$

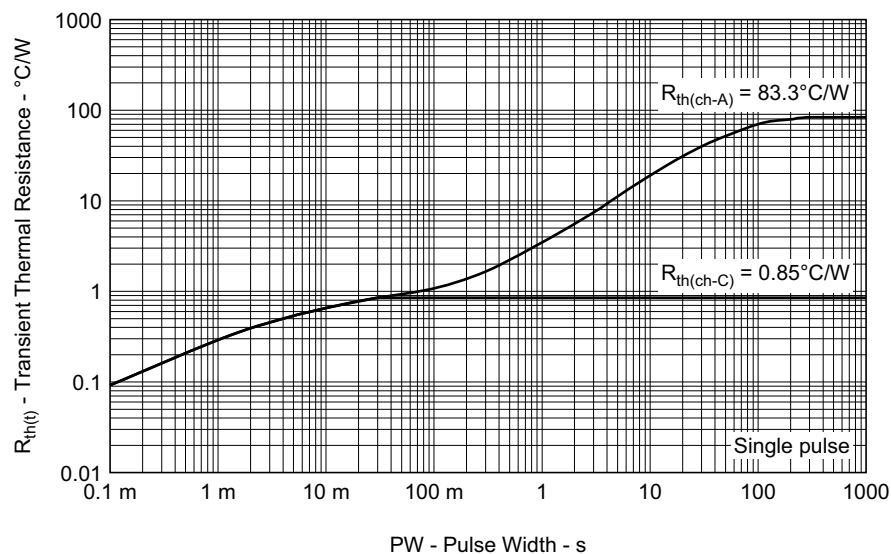
*3 Not subject of production test. Verified by design/characterization.

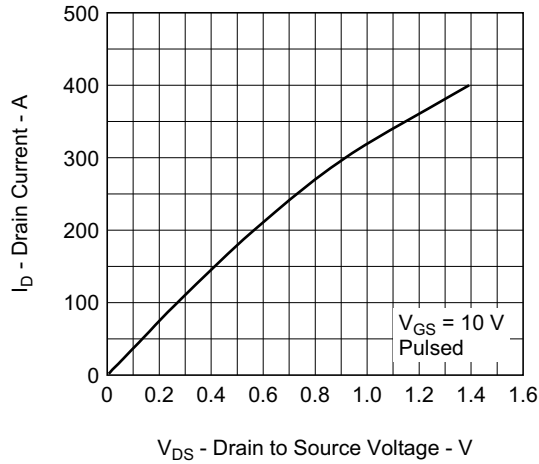
Typical Characteristics ($T_A = 25^\circ\text{C}$)



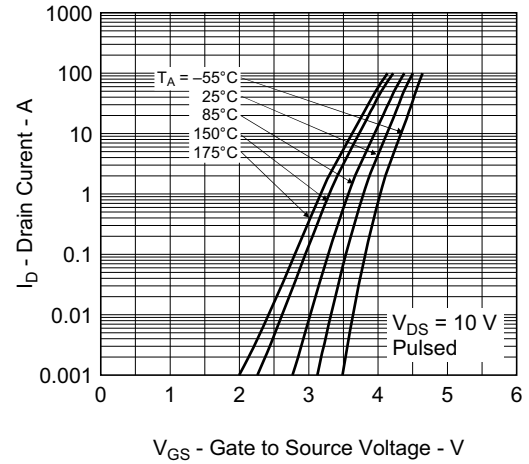
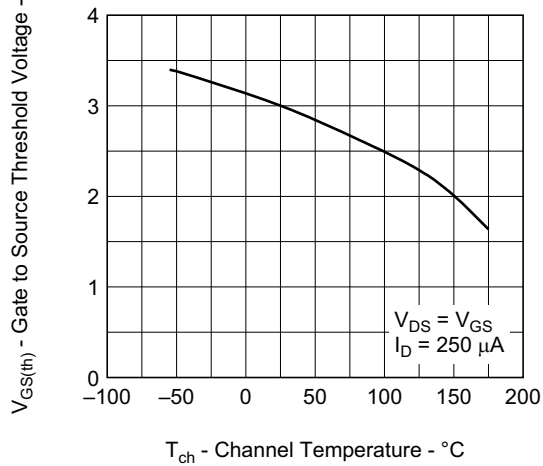
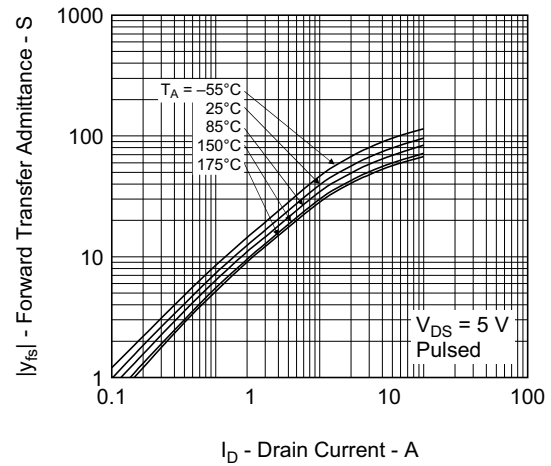
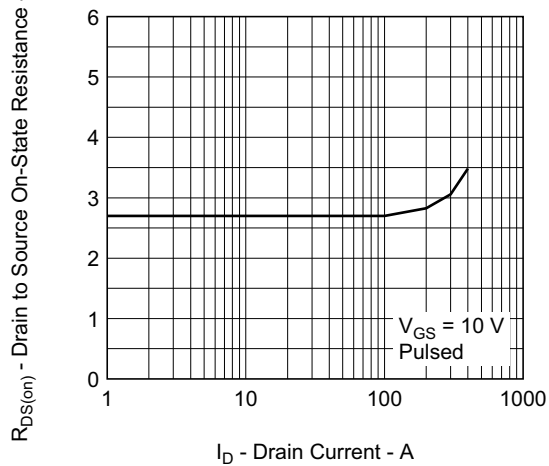
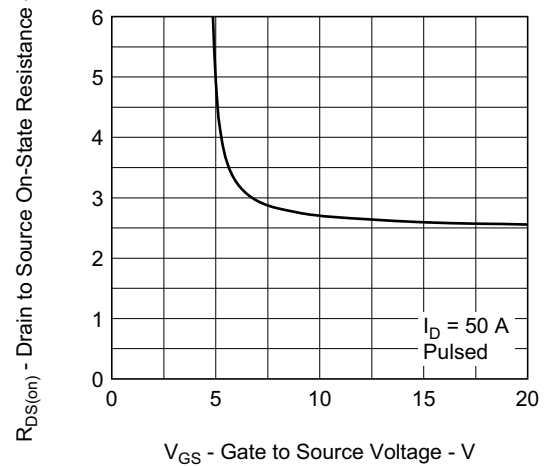
V_{DS} - Drain to Source Voltage - V

TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH

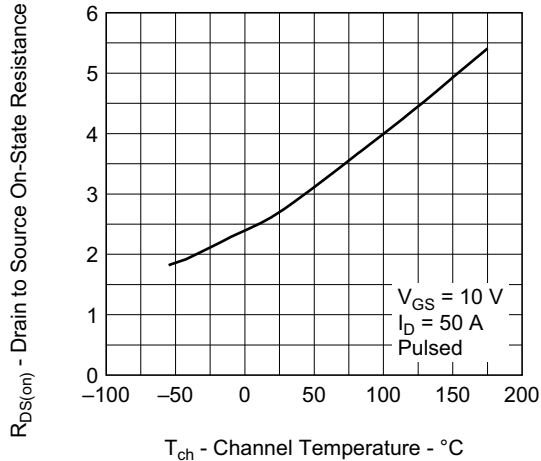


DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE

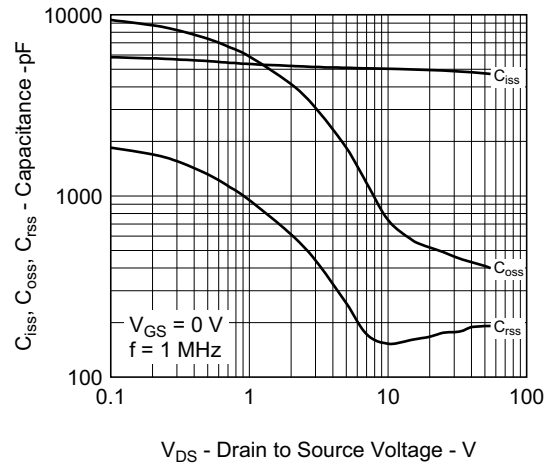
FORWARD TRANSFER CHARACTERISTICS

GATE TO SOURCE THRESHOLD VOLTAGE vs.
CHANNEL TEMPERATUREFORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENTDRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENTDRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE

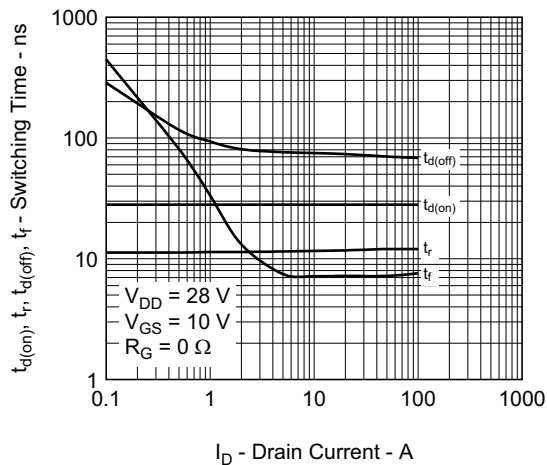
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



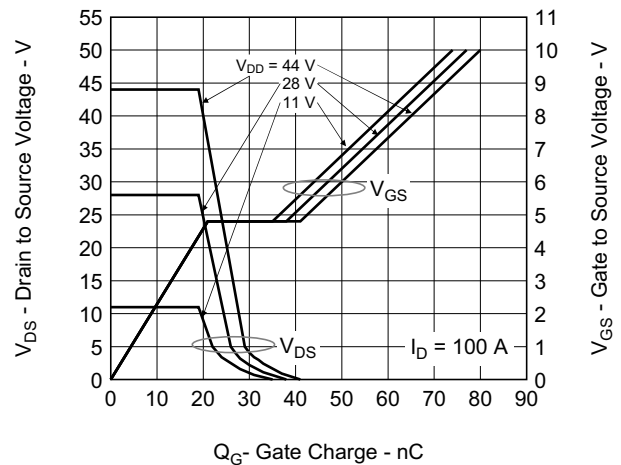
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



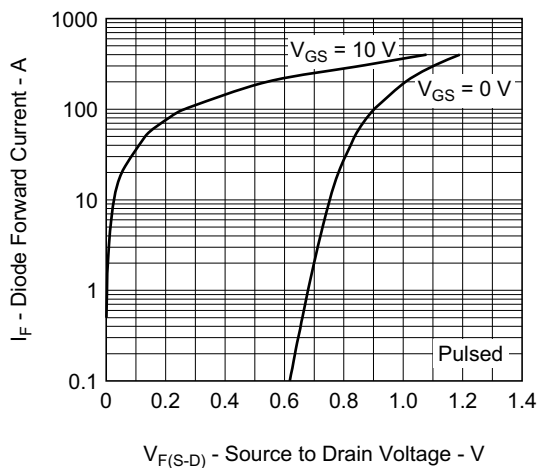
SWITCHING CHARACTERISTICS



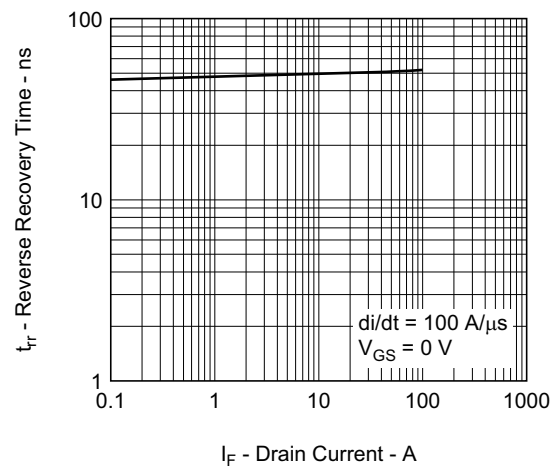
DYNAMIC INPUT/OUTPUT CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE

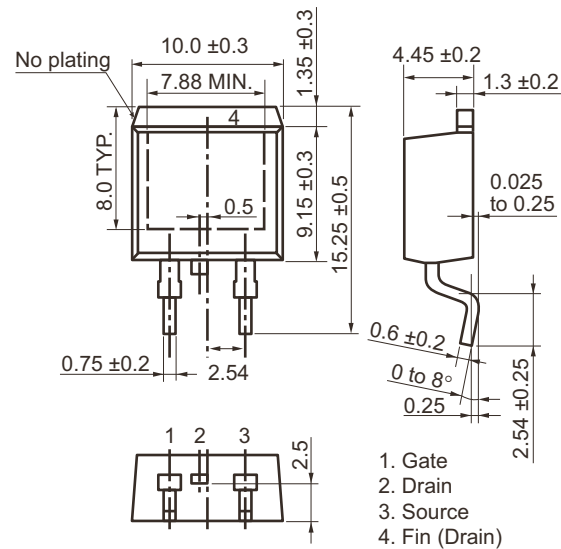


REVERSE RECOVERY TIME vs. DRAIN CURRENT

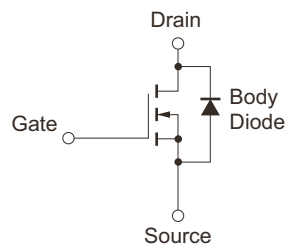


Package Drawing (Unit: mm)

TO-263 (MP-25ZP) (Mass: 1.5 g TYP.)



Equivalent Circuit



Remark: Strong electric field, when exposed to this device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop generation of static electricity as much as possible, and quickly dissipate it once, when it has occurred.

Revision History	NP100N055PUK Data Sheet
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Rev.	Date	Description	
		Page	Summary
1.00	Dec 12, 2011	—	First Edition Issued
2.00	May 24 ,2018	1	Note 3 was added
		2	Note 2 was added

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