



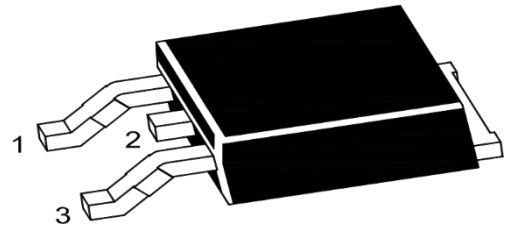
# PJM80H04NTE

## N-Channel Power MOSFET

### Descriptions

- Fast Switching
- Low  $R_{DS(ON)}$  and Gate Charge
- Low Reverse Transfer Capacitance
- 100% Single Pluse Avanalanche Energy Test

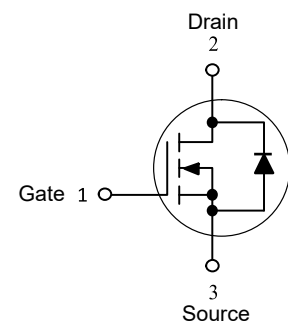
TO-252



### Features

- $V_{DS} = 800V$ ,  $I_D = 4A$
- $R_{DS(ON)} < 3.6 \Omega$  (@ $V_{GS}=10V$ )
- ESD Protected  $> 4kV$  (HBM)
- MSL: 1 Level

### Schematic Diagram



### Applications

- Power Switch
- Adaptor, Charger

### Absolute Maximum Ratings

Ratings at  $T_C = 25^\circ C$  unless otherwise specified.

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DSS}$	800	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	4
		$T_C=100^\circ C$	2.5
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	16	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	650	mJ
Power Dissipation	$P_D$	85	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	150, -55 to 150	$^\circ C$
<b>Thermal Characteristics</b>			
Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	75	$^\circ C/W$
Maximum Junction-to-Case	$R_{\theta JC}$	1.47	$^\circ C/W$



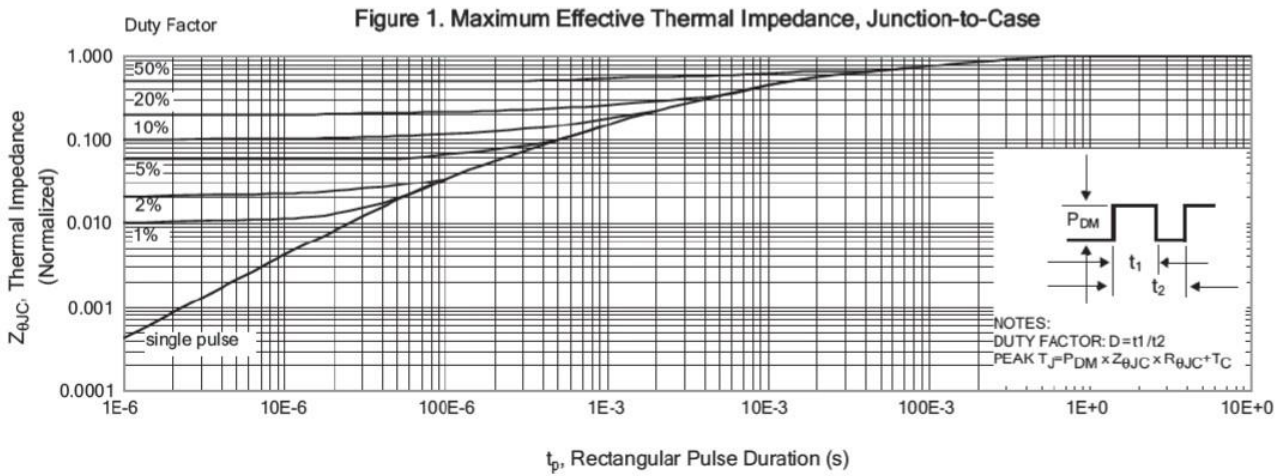
### Electrical Characteristics (T<sub>c</sub> = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	800	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =800V, V <sub>GS</sub> =0V T <sub>A</sub> =25°C	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V	--	--	±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2	--	4	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.0A	--	3.0	3.6	Ω
<b>Dynamic Parameters</b>						
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =4.0A	--	5.5	--	S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz	--	490	--	pF
Output Capacitance	C <sub>oss</sub>		--	50	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	25	--	pF
<b>Switching Parameters</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =400V, I <sub>D</sub> =4A	--	16	--	nC
Gate Source Charge	Q <sub>gs</sub>		--	3.0	--	nC
Gate Drain Charge	Q <sub>gd</sub>		--	6.0	--	nC
Turn-On DelayTime	t <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =400V, I <sub>D</sub> =4A R <sub>g</sub> =12Ω	--	10	--	ns
Turn-On Rise Time	t <sub>r</sub>		--	10	--	ns
Turn-Off DelayTime	t <sub>D(off)</sub>		--	30	--	ns
Turn-Off Fall Time	t <sub>f</sub>		--	15	--	ns
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =4A, V <sub>GS</sub> =0, T <sub>J</sub> =25°C di/dt=100A/μs	--	135	--	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		--	446	--	μC
Body Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> =4A, V <sub>GS</sub> =0V	--	--	1.5	V
Body Diode Continuous Source Current	I <sub>SD</sub>		--	--	4.0	A
Body Diode Maximum Pulse Current	I <sub>SM</sub>		--	--	16	A

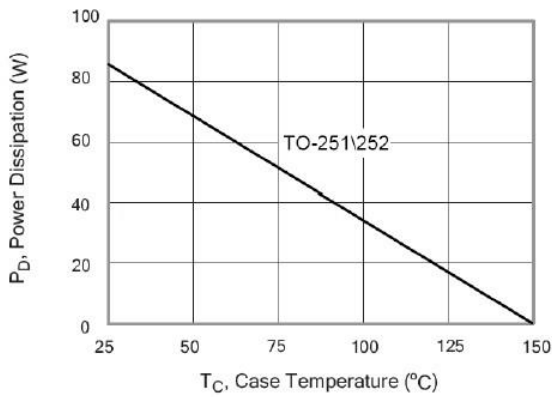
Notes: 1. Repetitive rating; Pulse width limited by maximum junction temperature;  
 2. L=10.0mH, I<sub>D</sub>=4.0A, start T<sub>J</sub>=25°C



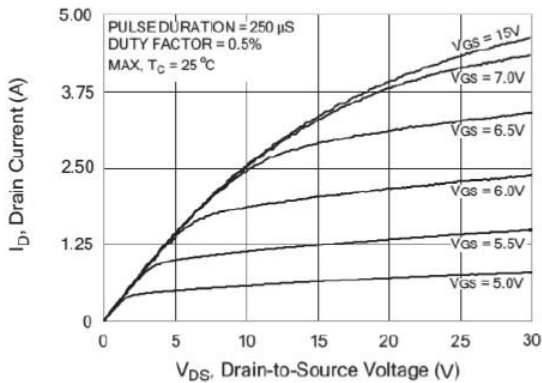
### Electrical Characteristics Curves



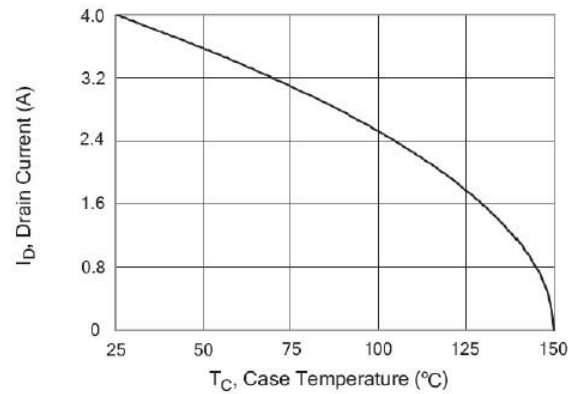
**Figure 2. Maximum Power Dissipation vs Case Temperature**



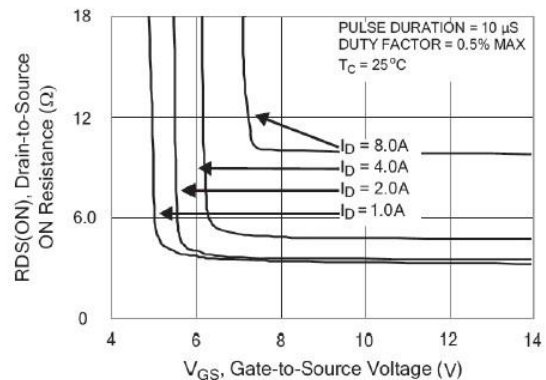
**Figure 4. Typical Output Characteristics**



**Figure 3. Maximum Continuous Drain Current vs Case Temperature**



**Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current**





# PJM80H04NTE

## N-Channel Power MOSFET

Figure 6. Maximum Peak Current Capability

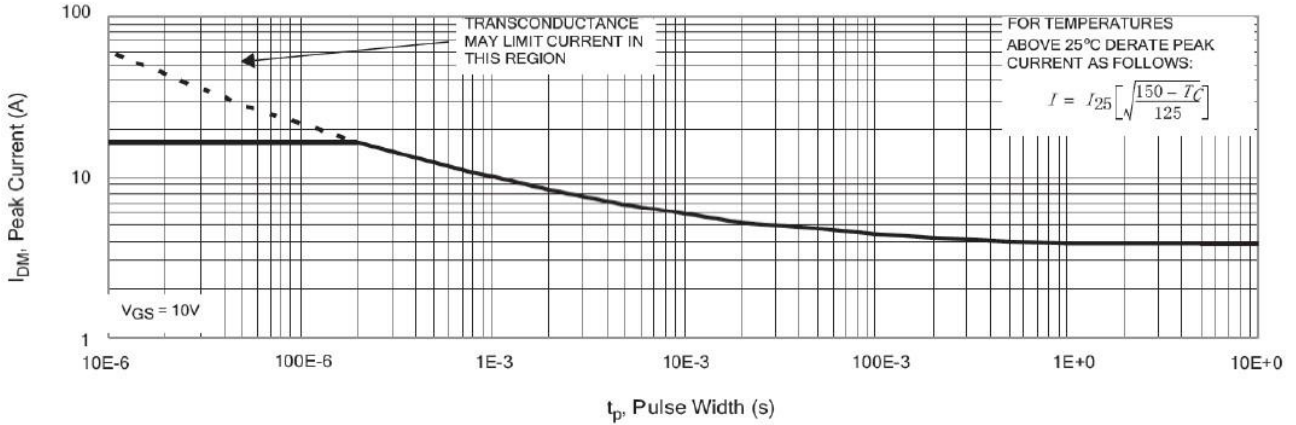


Figure 7. Typical Transfer Characteristics

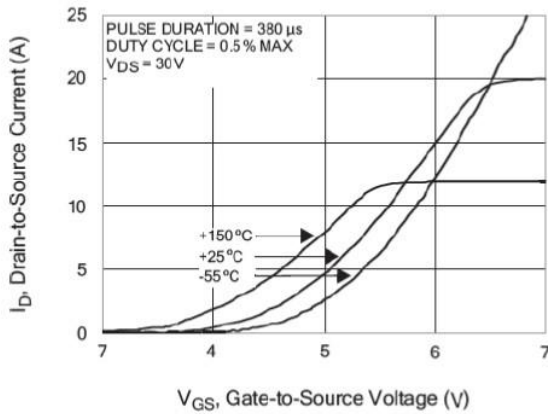


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

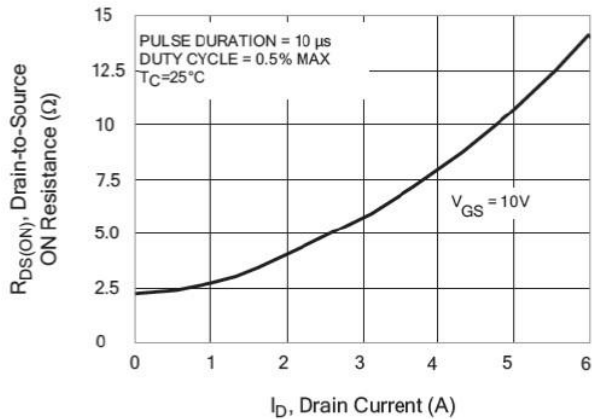


Figure 8. Unclamped Inductive Switching Capability

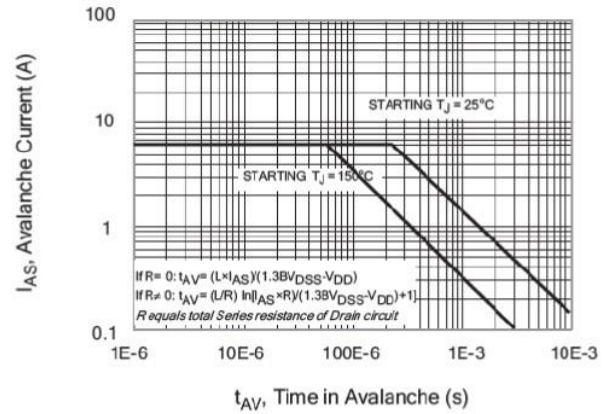
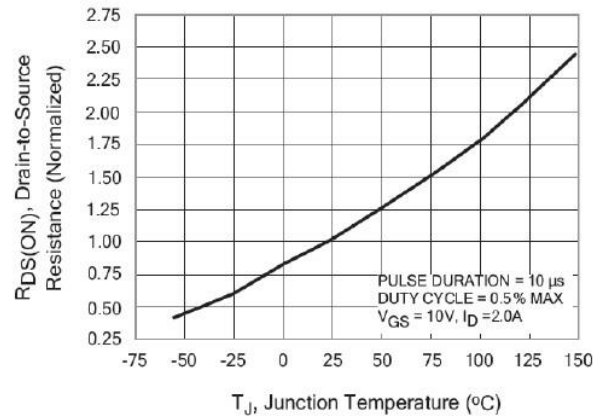


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature





# PJM80H04NTE

## N-Channel Power MOSFET

Figure 11. Typical Breakdown Voltage vs Junction Temperature

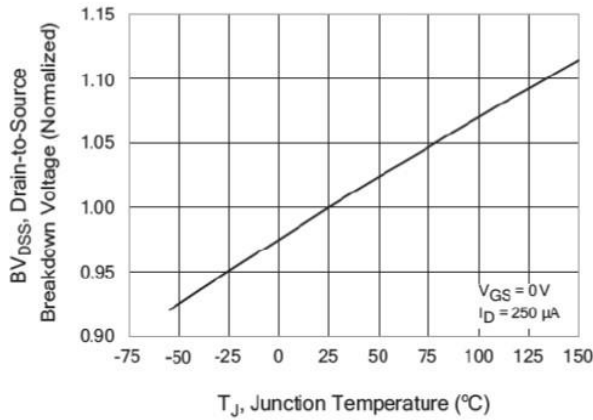


Figure 12. Typical Threshold Voltage vs Junction Temperature

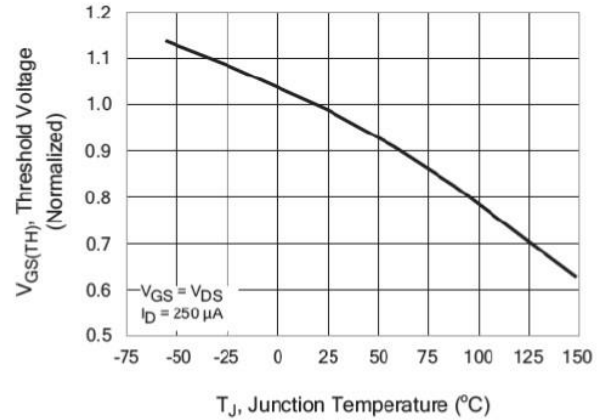


Figure 13. Maximum Forward Bias Safe Operating Area

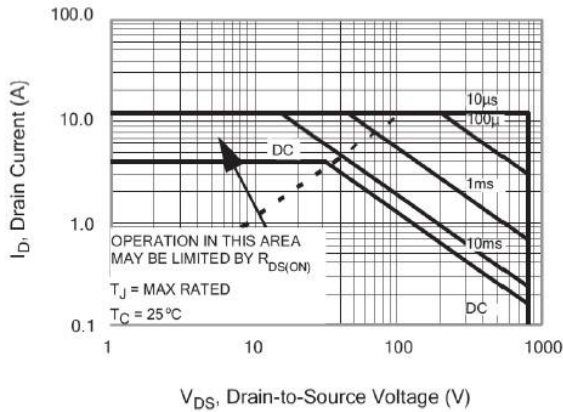


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

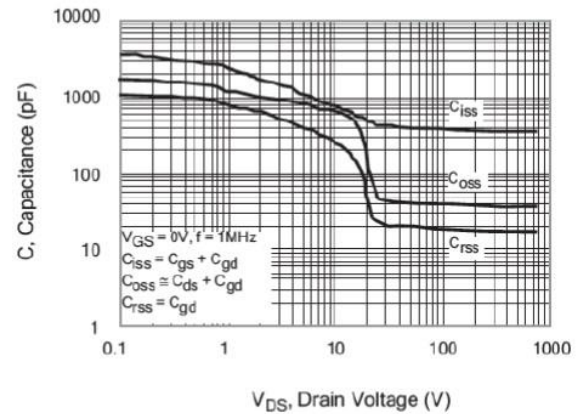


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

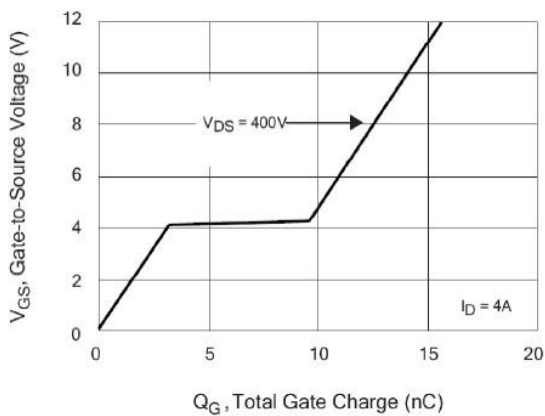
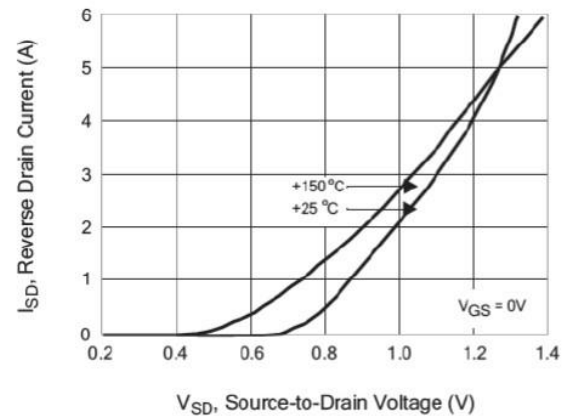


Figure 16. Typical Body Diode Transfer Characteristics



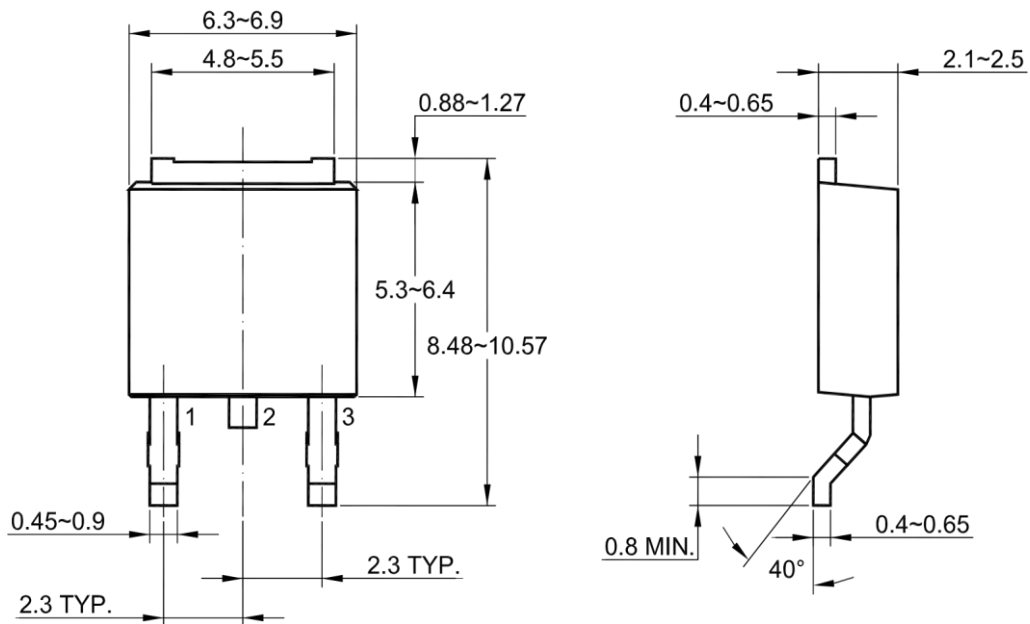


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## N-Channel Power MOSFET

### Package Outline (TO-252)

Unit: mm



### Recommended Soldering Footprint Unit: mm

