PJM50H30NTH
N-Channel Power MOSFET

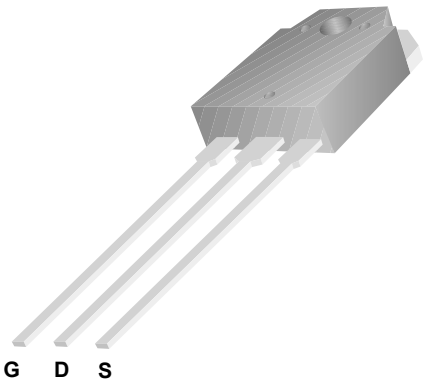
Features

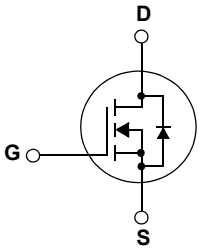
- Advanced Planar Process
- RDS(ON), typ.=150mΩ@VGS=10V
- Low Gate Charge Minimize Switching Loss
- Rugged Poly Silicon Gate Structure

Applications

- BLDC Motor Driver
- Electric Welder
- High Efficiency SMPS

TO-3PN





Absolute Maximum Ratings

Ratings at T_C = 25℃ unless otherwise specified.

Parameter		Symbol	Value	Units
Drain-to-Source Voltage		V_{DS}	500	V
Continuous Drain Current		I_D	30	A
	T_C=100 ℃		18	
Pulsed Drain Current Note 1		I_{DM}	120	A
Gate-to-Source Voltage		V_{GS}	±30	V
Single Pulse Avalanche Energy		E_{AS}	2000	mJ
Peak Diode Recovery Note 2		dv/dt	5.0	V/ns
Power Dissipation		P_D	333	W
Derating Factor above 25°C			2. 63	W/℃
Operating Junction and Storage Temperature Range		T_{STG}	–55 to 150	℃
Maximum Temperature for Soldering		T_L	300	℃

Note: 1. Repetitive rating; pulse width limited by maximum junction temperature.
2. Package limited current.
3. Pulse width≤380μs; duty cycle≤2%.

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.38	℃/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	℃/W

Electrical Characteristics

Ratings at T_C = 25℃ unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	500	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	-	4.5	V
Gate Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =500V, V_{GS} = 0V	-	-	5	μA
		V_{DS} =400V, V_{GS} = 0V, T_J = 125℃	-	-	100	
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 15A	-	0.15	0.2	Ω
Forward Transconductance	g_{FS}	V_{DS}=25V, I_D=15A	-	38	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	V_{DS} = 250V, V_{GS} =0 ~ 10V, I_D = 30A	-	108	-	nC
Gate-Source Charge	Q_{gs}		-	21	-	
Gate-Drain Charge	Q_{gd}		-	44	-	
Input Capacitance	C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz	-	4150	-	pF
Output Capacitance	C_{oss}		-	82	-	
Reverse Transfer Capacitance	C_{rss}		-	500	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 250V, Rg = 10Ω, V_{GS} = 10V, I_D = 30A	-	34	-	ns
Turn-On Rise Time	t_r		-	114	-	
Turn-Off Delay Time	$t_{d(off)}$		-	108	-	
Turn-Off Fall Time	t_f		-	72	-	
Source-Drain Diode Characteristics						
Diode Forward Current	I_{SD}		-	-	30	A
Diode Forward Voltage	V_{SD}	I_S= 30 A, V_{GS} = 0V	-	0.88	1.5	V
Reverse Recovery Time	trr	I_S=30A, dI_F/dt=100A/μs, V_{GS}=0V	-	900	-	ns
Reverse Recovery Charge	Qrr		-	2.1	-	μC

Electrical Characteristics Curves

Figure 1. Maximum Transient Thermal Impedance

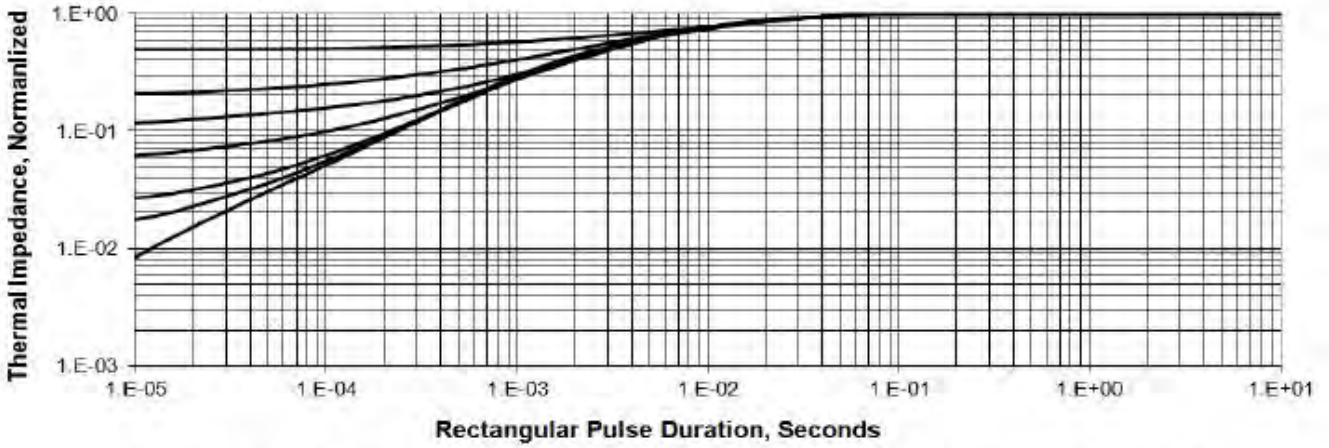


Figure 2 . Max. Power Dissipation vs Case Temperature

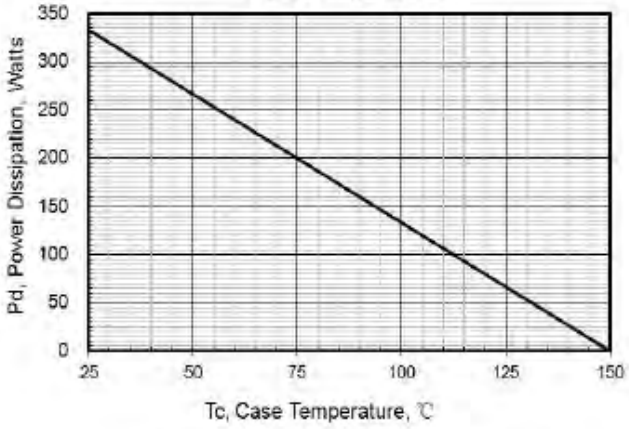


Figure 3 .Maximum Continuous Drain Current vs Tc

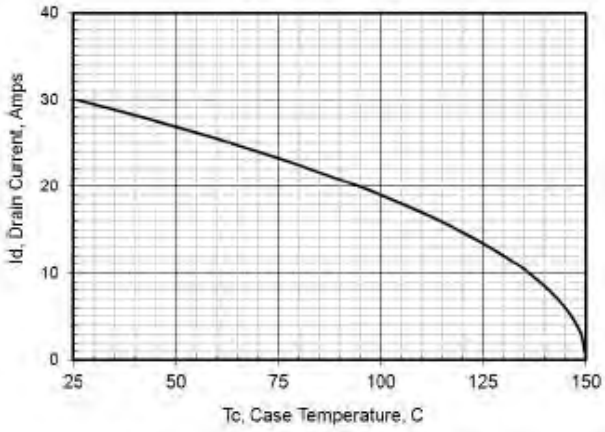


Figure 4. Output Characteristics

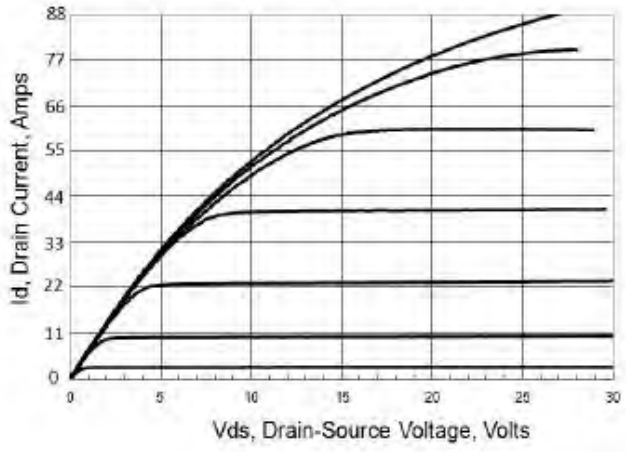


Figure 5. Rdson vs Gate Voltage

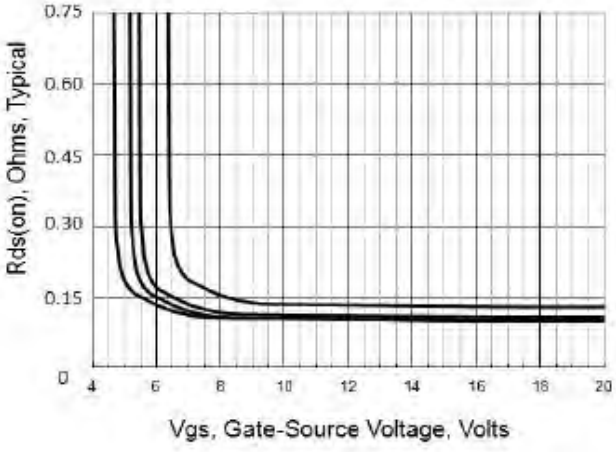


Figure 6. Peak Current Capability

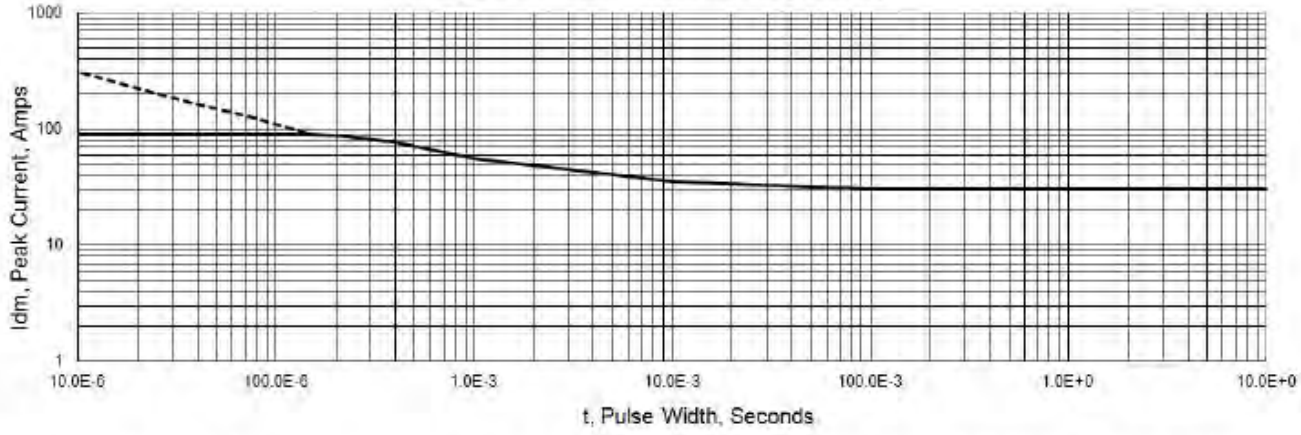


Figure 7. Transfer Characteristics

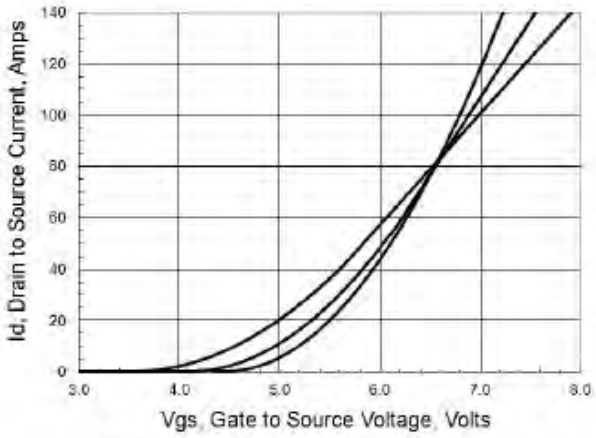


Figure 8. Unclamped Inductive Switching Capability

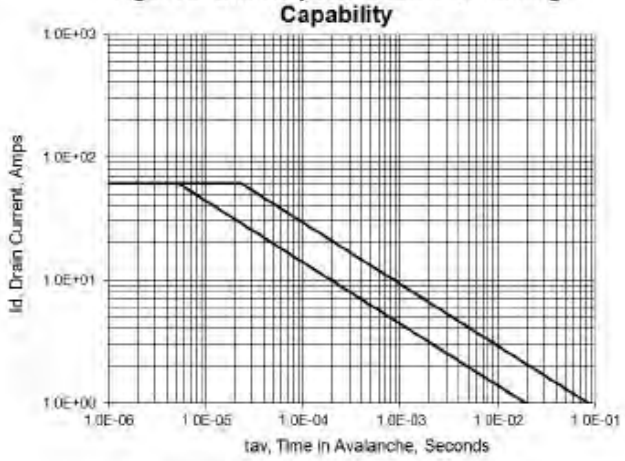


Figure 9. Drain to Source ON Resistance vs Drain Current

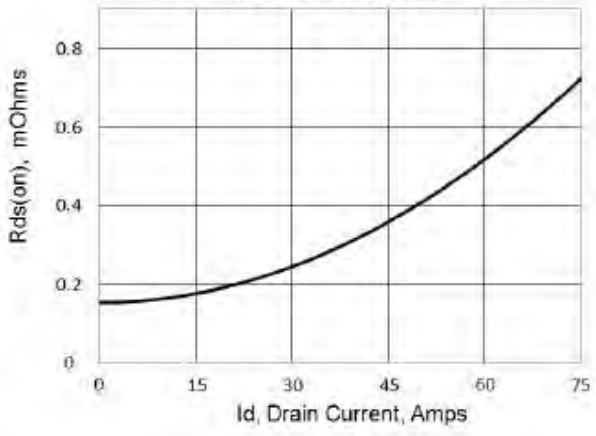


Figure 10. Rdson vs Junction Temperature

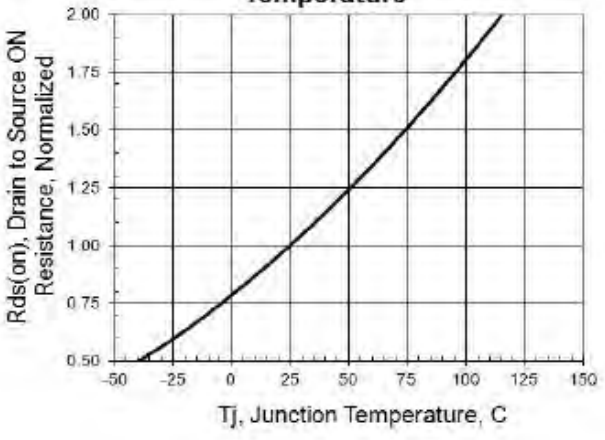


Figure 11.Typical Breakdown Voltage vs. Junction Temperature

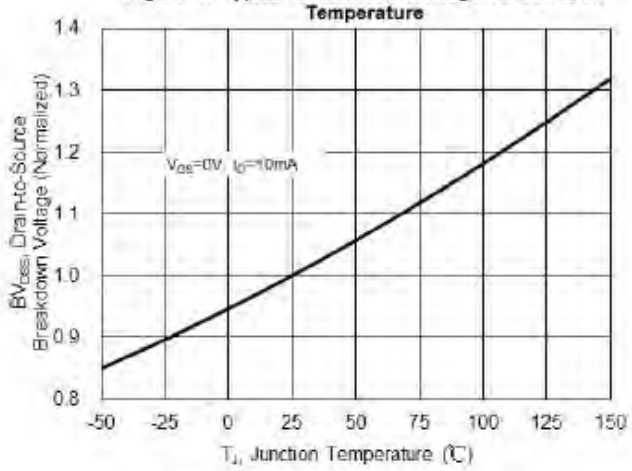


Figure 12.Typical Threshold Voltage vs. Junction Temperature

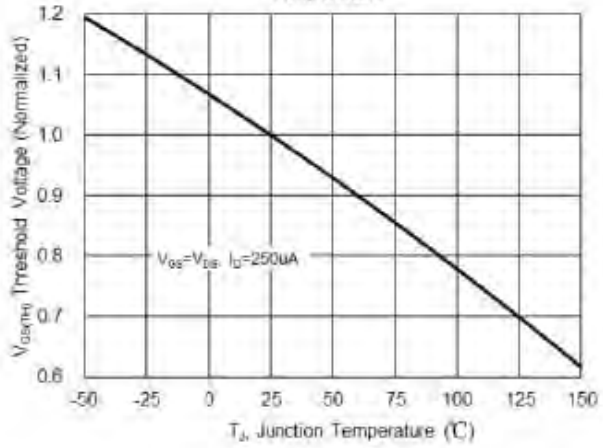


Figure 13 . Maximum Safe Operating Area

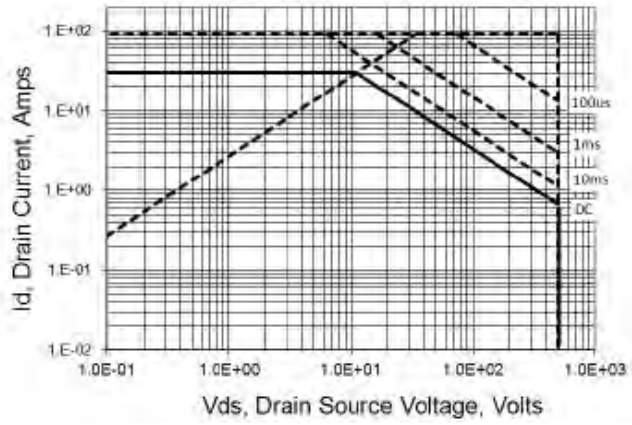


Figure 14. Capacitance vs Vds

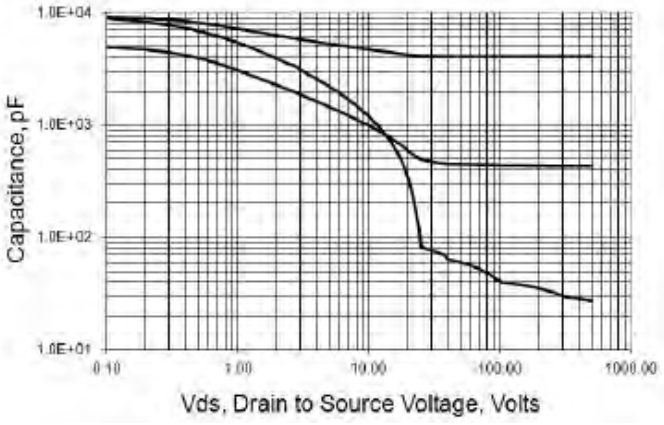


Figure 15 .Typical Gate Charge

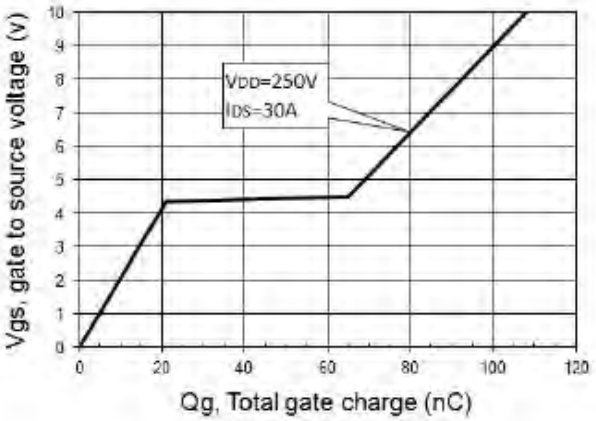
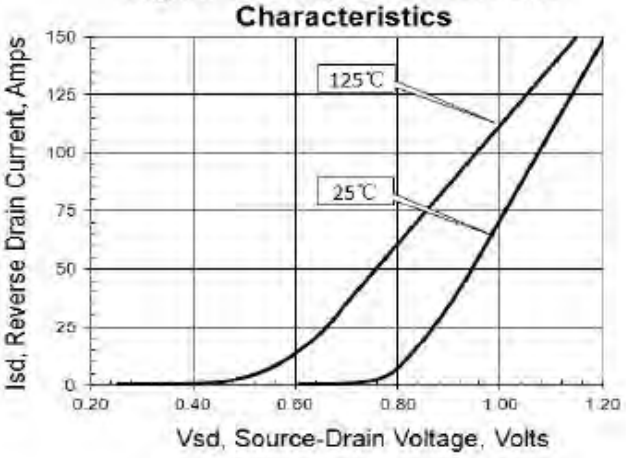
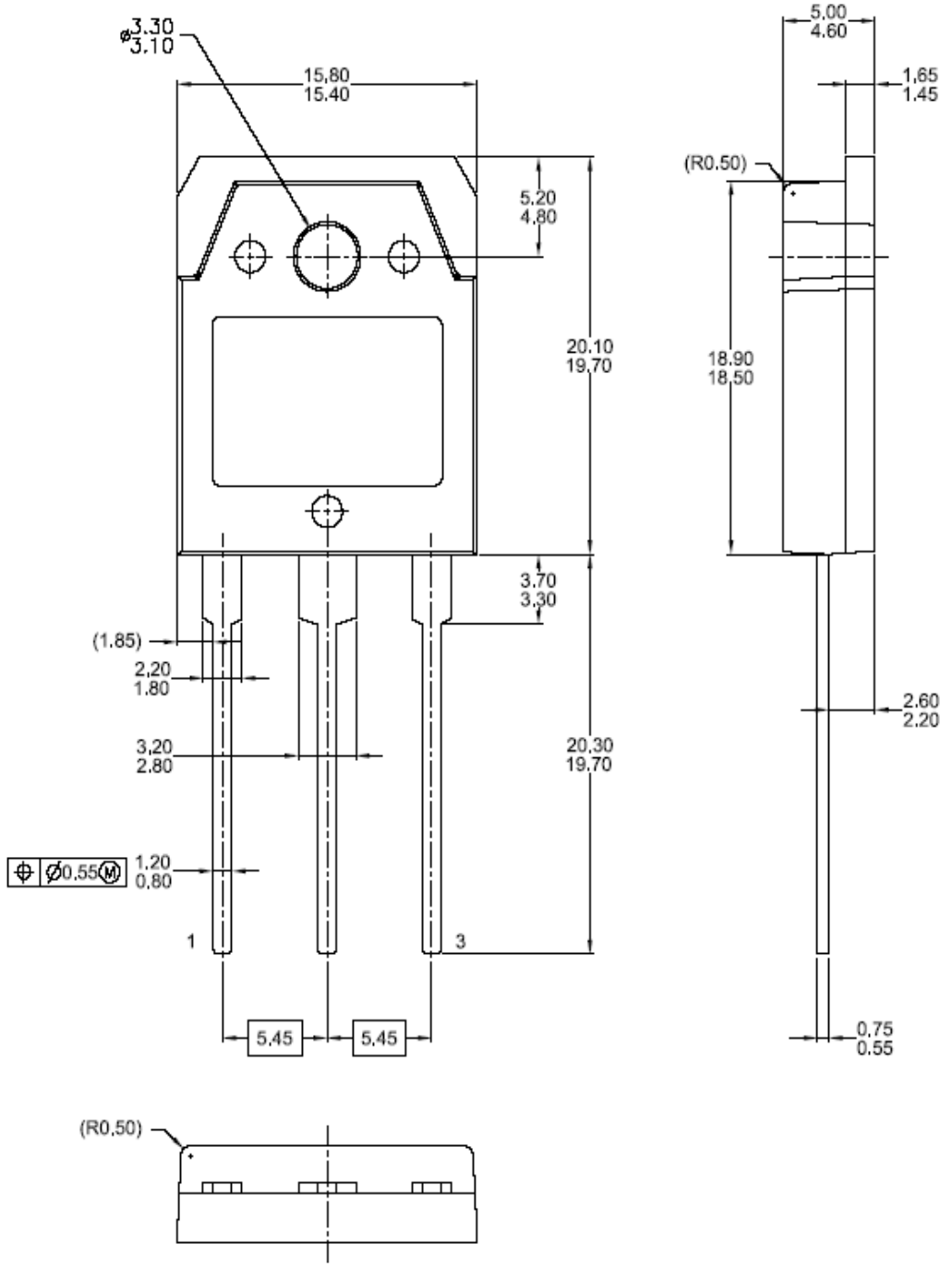


Figure 16.Body Diode Transfer Characteristics



Package Outline

TO-3PN



Ordering information

Device	Package	Shipping
PJM50H30NTH	TO-3PN	30PCS/Tube