

### Features

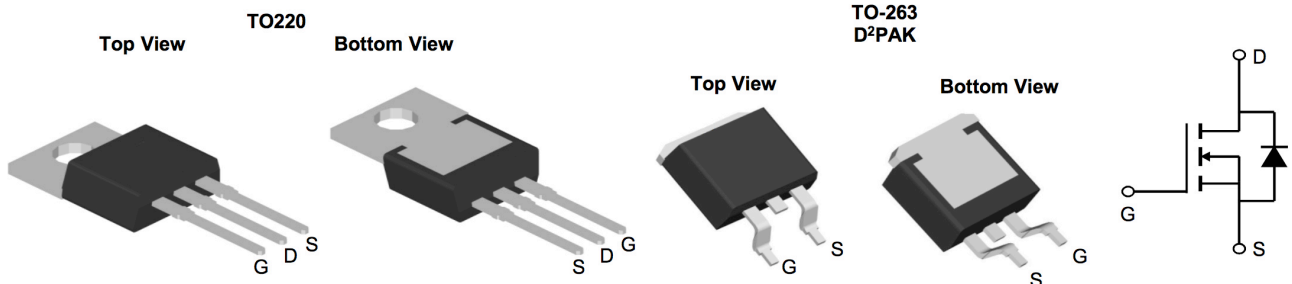
- 200V/80A  
 $R_{DS(ON)} = 17m\Omega(Typ.)@V_{GS}=10V$
- Advanced HEFE<sup>®</sup> Technology
- Ultra Low On-Resistance
- Excellent  $g_m R_{DS(on)}$  Product
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Compliant)

### Applications

- Motor Drive
- Uninterruptible Power Supply
- DC/DC converter
- General Purpose Application



### Pin Configurations



Product ID	Pack	Marking	Qty(PCS)
XPX80N20TU	TO-220-3L	XPX80N20TUXXX YYYY	1000
XPX80N20TV	TO-263-3L	XPX80N20TV XXX YYYY	800

### Absolute Maximum Ratings (T<sub>c</sub>=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-to-Source Voltage	200	V
I <sub>D@TA=25°C</sub>	Continuous Drain Current V <sub>GS</sub> @ 10V	75	A
I <sub>D@TA=70°C</sub>	Continuous Drain Current V <sub>GS</sub> @ 10V	52	A
I <sub>DM</sub> <sup>a1</sup>	Pulsed Drain Current (pulse width limited by T <sub>JM</sub> )	300	A
V <sub>GS</sub>	Gate-to-Source Voltage	±30	V
E <sub>AS</sub>	Single Pulse Avalanche Energy	300	mJ
E <sub>Ara1</sub>	Avalanche Energy, Repetitive	75	mJ
I <sub>AR a1</sub>	Avalanche Current	45	A
dv/dt <sup>a2</sup>	Peak Diode Recovery dv/dt	5.0	V/ns
P <sub>D</sub>	Power Dissipation	375	W
T <sub>J</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature Range	150, -55 to 150	°C
T <sub>L</sub>	Maximum Temperature for Soldering	300	°C
R <sub>θJC</sub>	Thermal Resistance, Junction-to-Case	0.45	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	60	°C/W

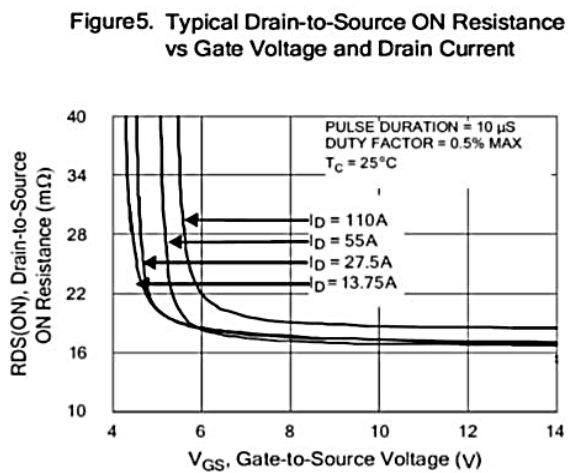
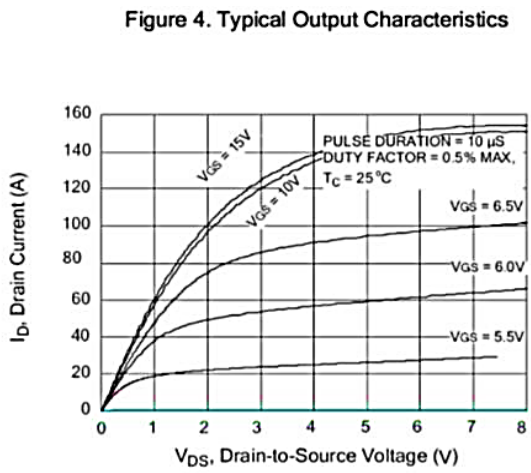
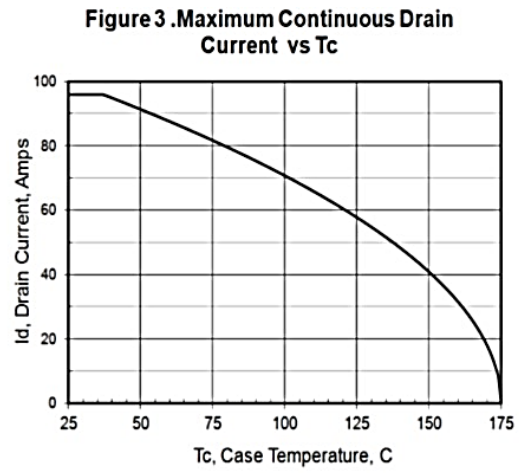
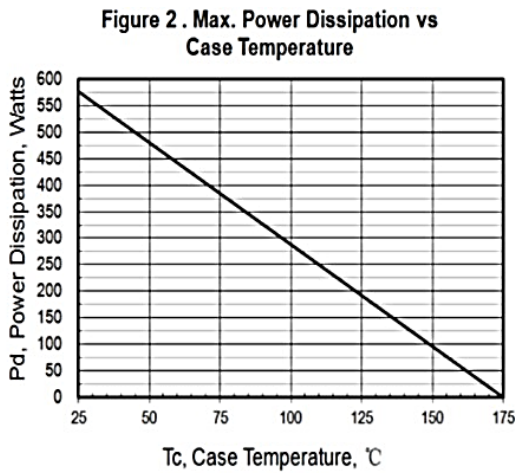
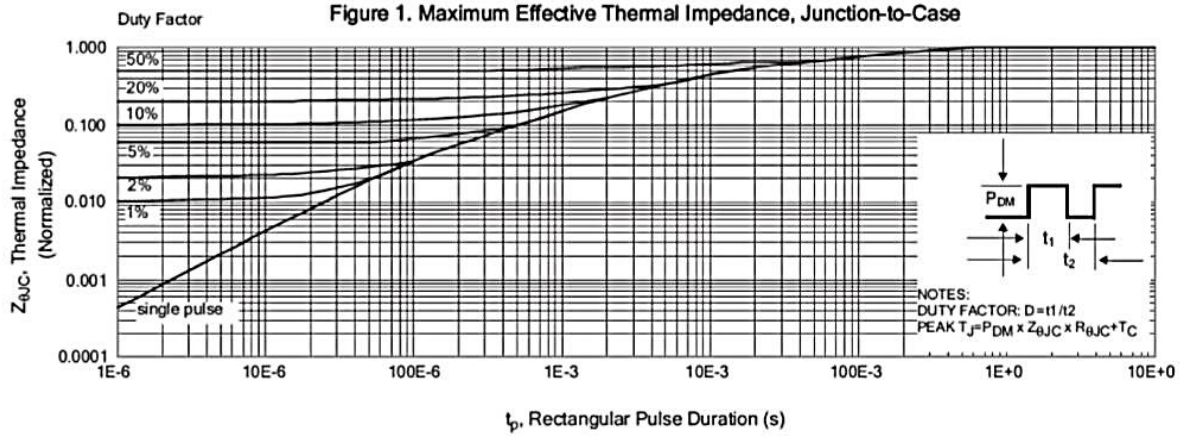
**200V N-Channel Enhancement Mode MOSFET**
**Electrical Characteristics@T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
VDSS	Drain to Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	200	220	--	V
IDSS	Drain to Source Leakage Current	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V, T <sub>a</sub> =25°C	--	--	1.0	μA
		V <sub>DS</sub> =200V, V <sub>GS</sub> =0V, T <sub>a</sub> =125°C	--	--	100	μA
IGSS(F)	Gate to Source Forward Leakage	V <sub>GS</sub> =+20V	--	--	100	nA
IGSS(R)	Gate to Source Reverse Leakage	V <sub>GS</sub> =-20V	--	--	-100	nA
RDS(ON)	Drain-to-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =40A	--	17	20	mΩ
VGS(TH)	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	3.6	--	5.0	V
gfs	Forward Trans conductance	V <sub>DS</sub> =25V, I <sub>D</sub> =40A	50	65	--	S
R <sub>g</sub>	Gate Resistance	V <sub>GS</sub> =0V V <sub>DS</sub> open f=1.0MHz		1.3		Ω
Ciss	Input Capacitance	V <sub>GS</sub> =0V V <sub>DS</sub> =25V f=1.0MHz	--	7450	--	pF
Coss	Output Capacitance		--	500	--	pF
Crss	Reverse Transfer Capacitance		--	210	--	pF
td(ON)	Turn-on Delay Time	I <sub>D</sub> =40A, V <sub>DS</sub> =50V V <sub>GS</sub> =10V, R <sub>g</sub> =2.5Ω	--	45	--	ns
t <sub>r</sub>	Rise Time		--	70	--	ns
td(OFF)	Turn-Off Delay Time		--	110	--	ns
t <sub>f</sub>	Fall Time		--	90	--	ns
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =40A, V <sub>DD</sub> =100V V <sub>GS</sub> =10V	--	85	--	nC
Q <sub>gs</sub>	Gate to Source Charge		--	15	--	nC
Q <sub>gd</sub>	Gate to Drain ("Miller") Charge		--	25	--	nC
ISD	Continuous Source Current (Body Diode)		--	--	75	A
ISM	Maximum Pulsed Current (Body Diode)		--	--	300	A
VSD	Diode Forward Voltage	I <sub>S</sub> =40A, V <sub>GS</sub> =0V	--	--	1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =30A, T <sub>J</sub> =25°C, V <sub>DD</sub> =50V dI <sub>F</sub> /dt=100A/μs, V <sub>GS</sub> =0V	--	110	--	ns
Q <sub>rr</sub>	Reverse Recovery Charge		--	0.55	--	uC

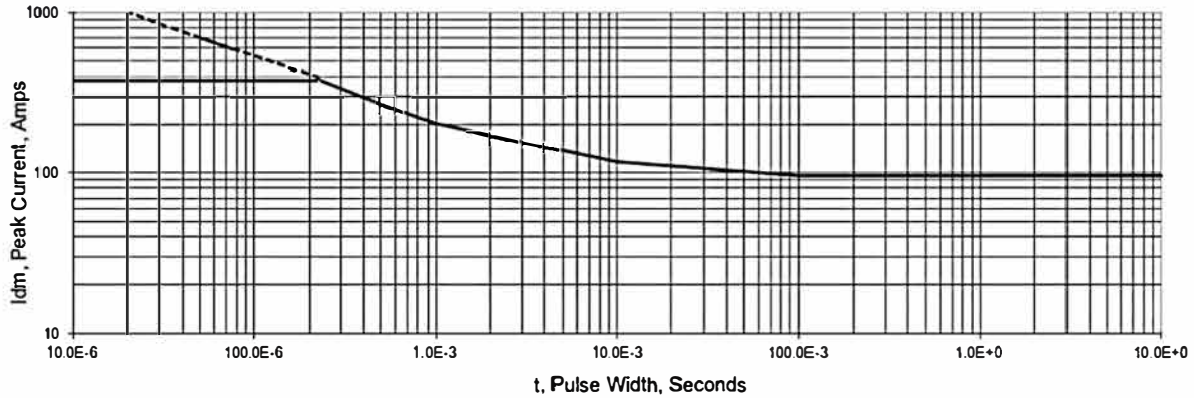
**Note :**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3. The EAS data shows Max. rating . The test condition is T<sub>J</sub> = 25°C, L = 0.3mH, R<sub>G</sub> = 25Ω, V<sub>DD</sub>=50V, V<sub>GS</sub>=10V a2
4. The I<sub>SD</sub>=40A, di/dt≤100A/us, V<sub>DD</sub>≤BV<sub>DS</sub>, Start T<sub>J</sub>=25°C
5. The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

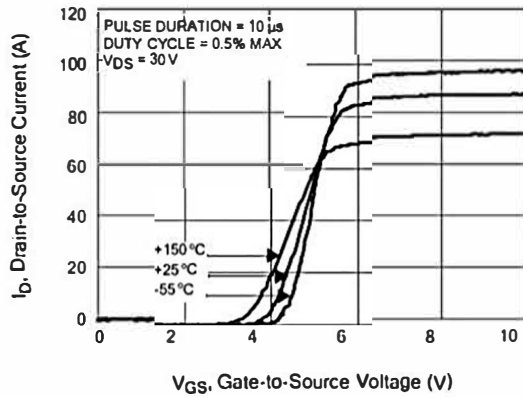
Characteristics Curve:



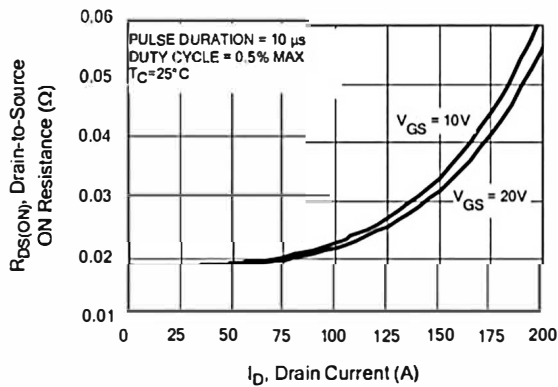
**Figure 6. Peak Current Capability**



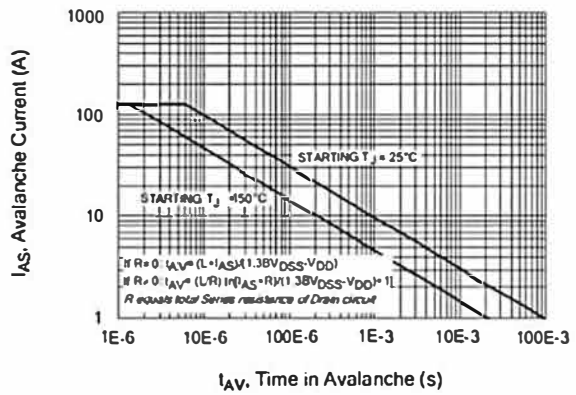
**Figure 7. Typical Transfer Characteristics**



**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**

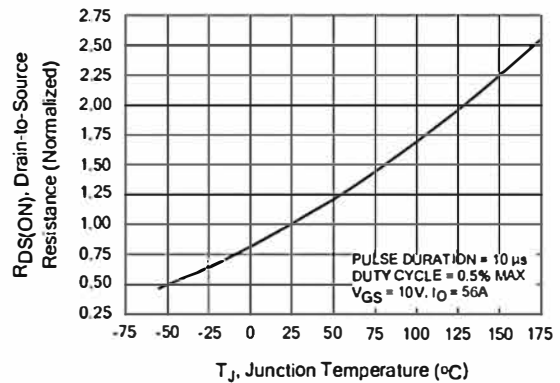


Figure 11. Typical Breakdown Voltage vs Junction Temperature

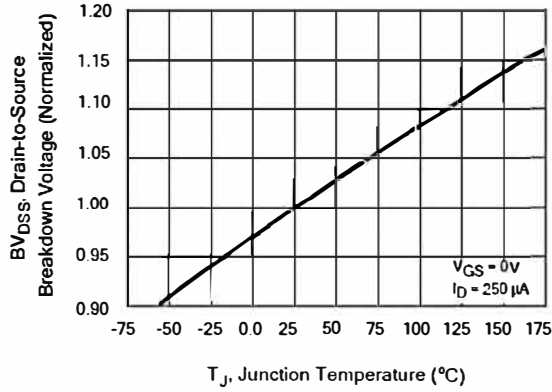


Figure 12. Typical Threshold Voltage vs Junction Temperature

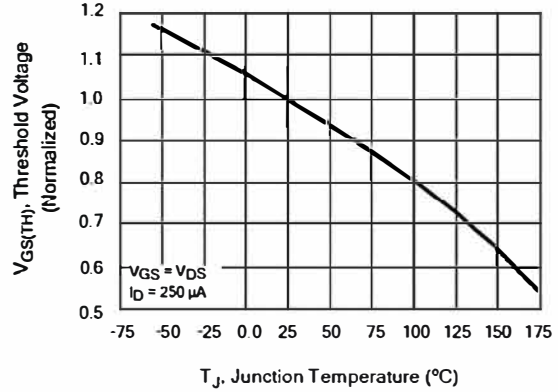


Figure 13. Maximum Safe Operating Area

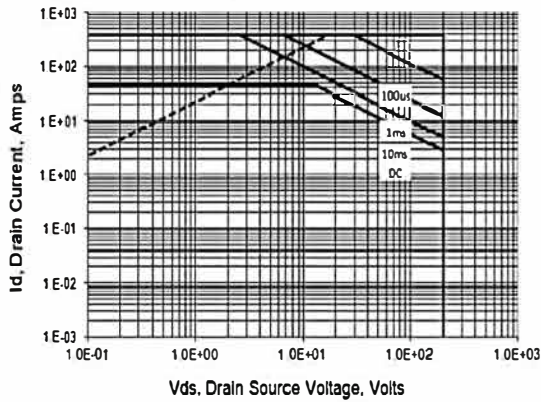


Figure 14. Capacitance vs V\_DS

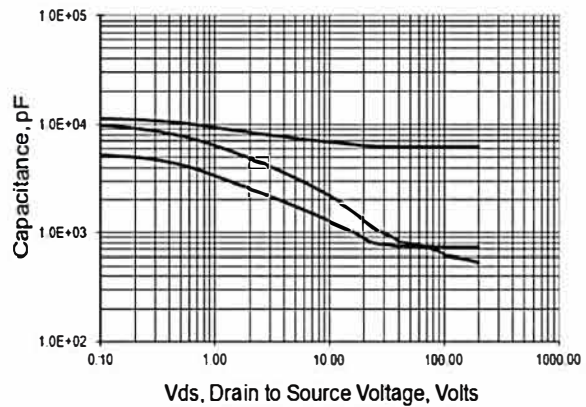


Figure 15. Typical Gate Charge

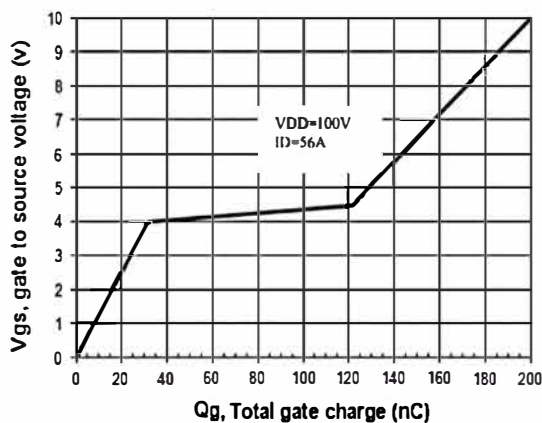
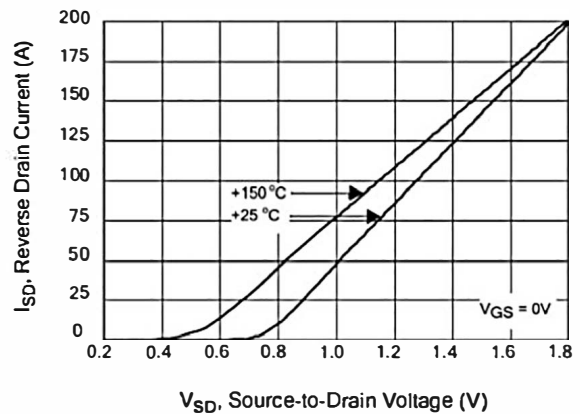
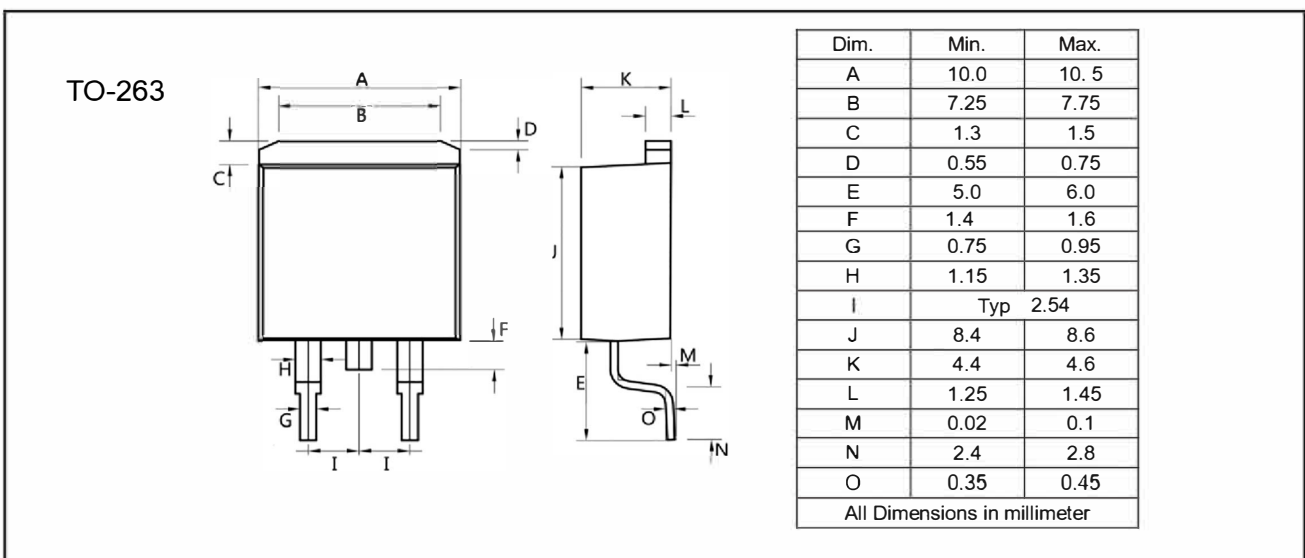
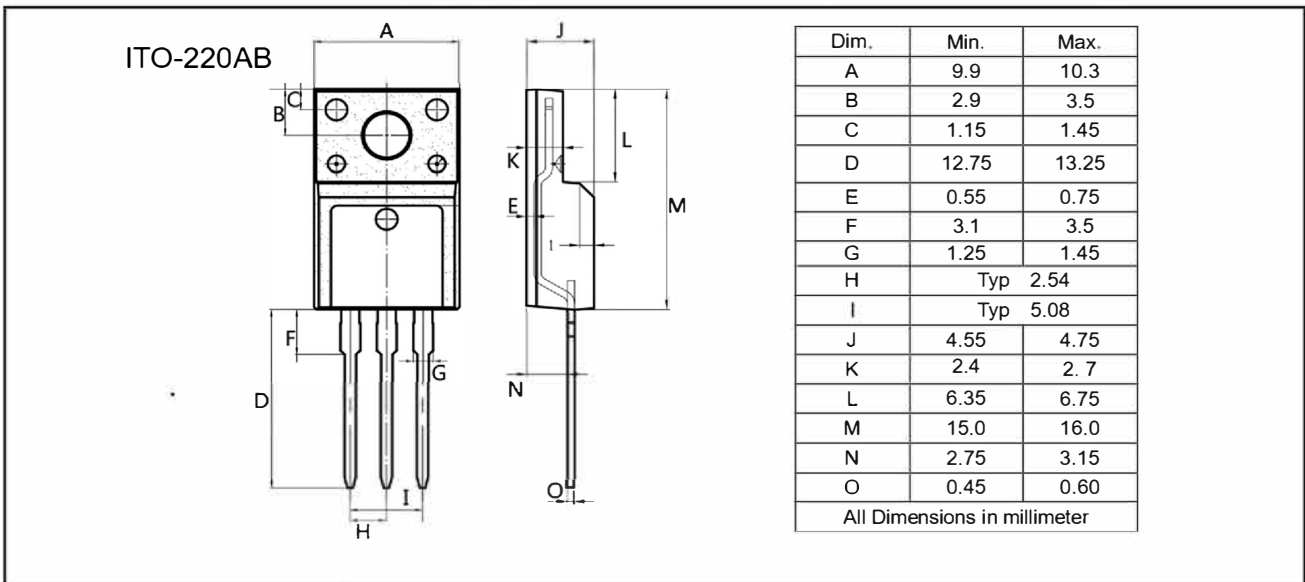
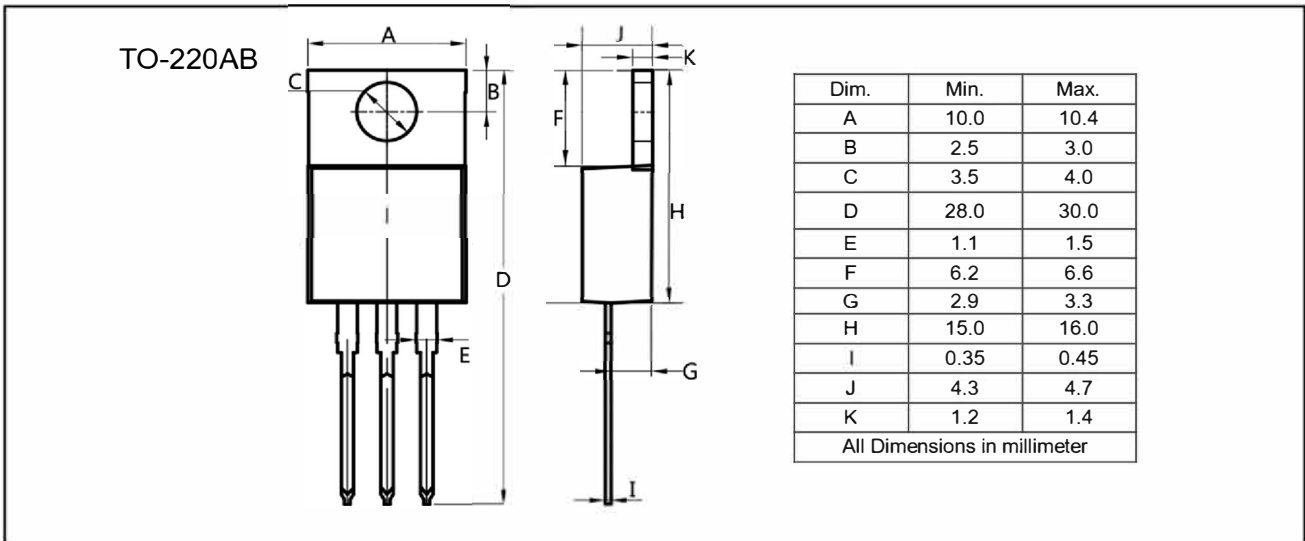


Figure 16. Typical Body Diode Transfer Characteristics





Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245°C±5°C	5sec±1 sec
Pb-Free device	260°C+0/-5°C	5sec±1 sec



This integrated circuit can be damaged by ESD. UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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