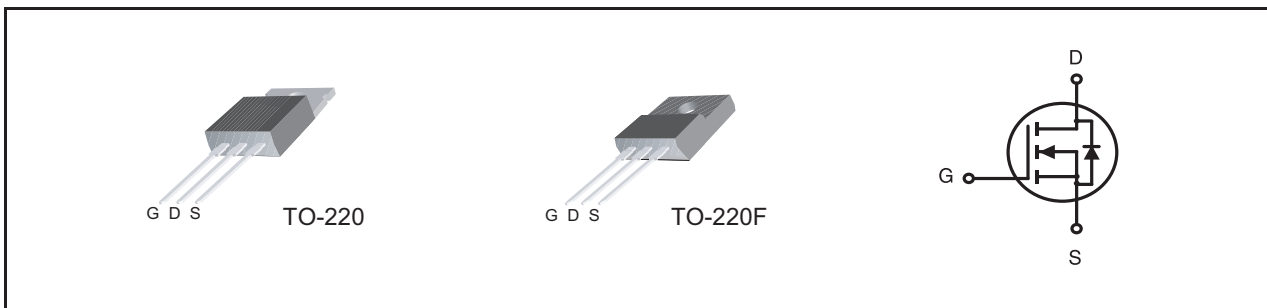


**400V N-Channel Planar MOSFET****PRODUCT SUMMARY**

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
400V	5.5A	1.0 @ V _{GS} =10V, I _D =3.3A

FEATURES

- Fast Switching.
- 100% Avalanche Rated.

**ABSOLUTE MAXIMUM RATINGS** (T_A=25°C unless otherwise noted)

Symbol	Parameter	SDP730	SDF730	Units	
V _{DSS}	Drain-Source Voltage	400		V	
V _{GS}	Gate-Source Voltage	±30		V	
I _D	Continuous Drain Current	T _C =25°C	5.5	5.5 *	A
		T _C =100°C	3.3	3.3 *	A
I _{DM}	Pulsed Drain Current, V _{GS} =10V ^a	22	22 *	A	
E _{AS}	Single Pulse Avalanche Energy ^b	250		mJ	
dv/dt	Peak Diode Recovery Energy ^c	4.5		V/ns	
P _D	Power Dissipation	T _C =25°C	69	36	W
	Linear Derating Factor	T _C >25°C	0.55	0.29	W/°C
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to 150		°C	

* Drain current limited by maximum junction temperature

THERMAL CHARACTERISTICS

Symbol	Parameter	SDP730	SDF730	Units
R _{θ JC}	Thermal Resistance, Junction-to-Case	1.8	3.5	°C/W
R _{θ JA}	Thermal Resistance, Junction-to-Ambient	62.5	62.5	°C/W

SDP/F730

Preliminary

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	400			V
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =250μA		0.54		V/°C
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} =400V, V _{GS} =0V			20	μA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{DS} =0V, V _{GS} =30V			100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{DS} =0V, V _{GS} =-30V			-100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =3.3A ^d			1	ohm
g _{FS}	Forward Transconductance	V _{DS} =15V, I _D =2.75A ^d			10	S
DYNAMIC CHARACTERISTICS						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		480		pF
C _{OSS}	Output Capacitance			80		pF
C _{RSS}	Reverse Transfer Capacitance			15		pF
SWITCHING CHARACTERISTICS						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =200V I _D =5.5A R _G =10 ohm, R _D =36.4 ohm V _{GS} =10V ^d		13		ns
t _r	Turn-On Rise Time			65		ns
t _{D(OFF)}	Turn-Off Delay Time			21		ns
t _f	Turn-Off Fall Time			38		ns
Q _g	Total Gate Charge	V _{DS} =200V, I _D =5.5A, V _{GS} =10V ^d		16		nC
Q _{gs}	Gate-Source Charge			2.3		nC
Q _{gd}	Gate-Drain("Miller") Charge			8.2		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I _S	Maximum Continuous Source Current(Body Diode)				5.5	A
I _{SM}	Maximum Pulsed Source Current(Body Diode)				22	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =2.75A ^d			1.5	V

Notes :

- Repetitive Rating : Pulse width limited by maximum junction temperature.
- V_{DD}=50V, starting T_J=25°C, L=16.5mH, R_G=25Ω, I_{AS}=5.5A
- I_{SD} ≤ 5.5A, di/dt ≤ 100A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
- Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

Jul,22,2009

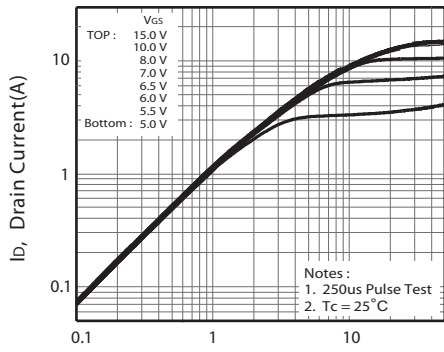


Figure 1. Output Characteristics

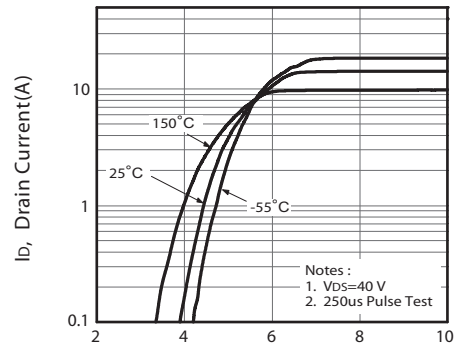


Figure 2. Transfer Characteristics

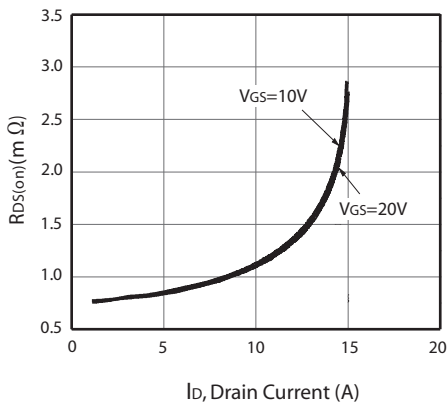


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

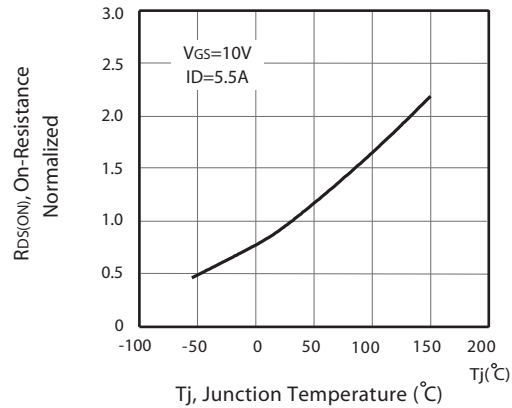


Figure 4. On-Resistance Variation with Drain Current and Temperature

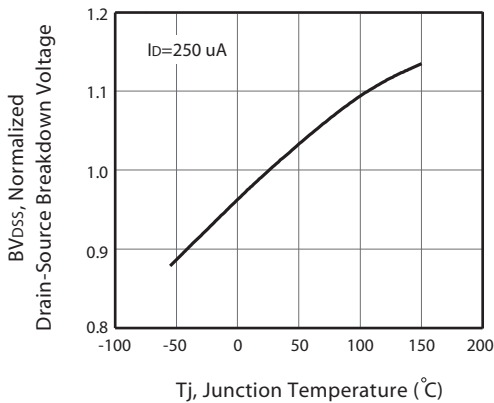


Figure 5. Breakdown Voltage Variation with Temperature

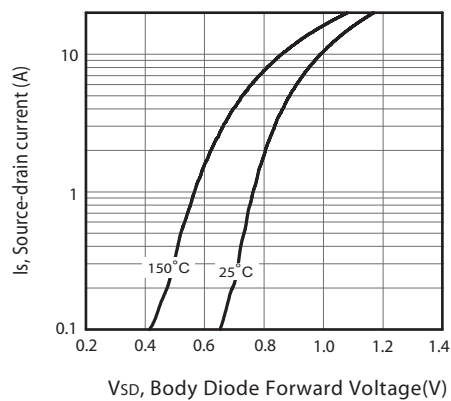
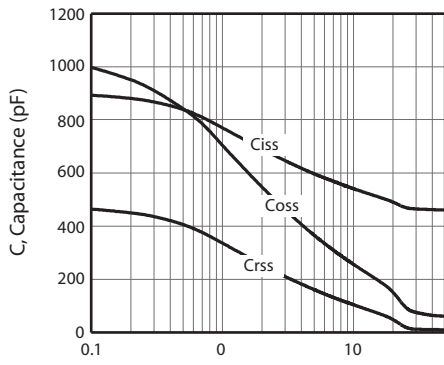
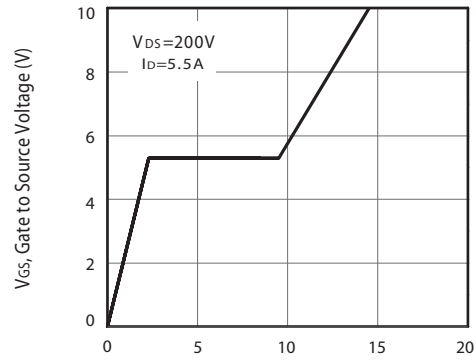


Figure 6. Body Diode Forward Voltage Variation with Source Current



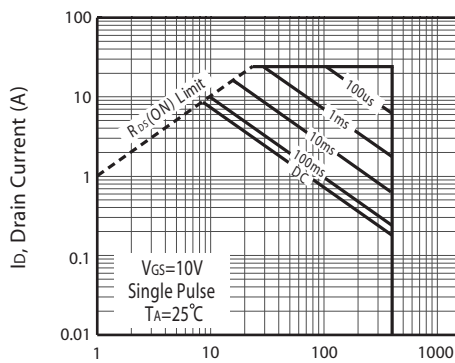
V_{DS} , Drain-to Source Voltage(V)

Figure 7. Capacitance



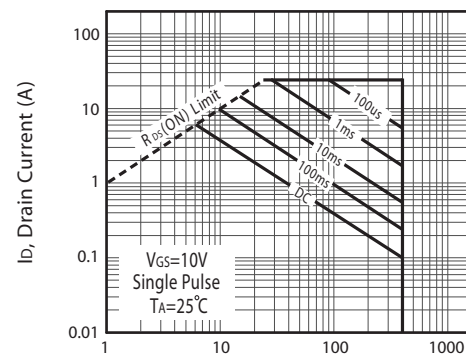
Q_g , Total Gate Charge(nC)

Figure 8. Gate Charge



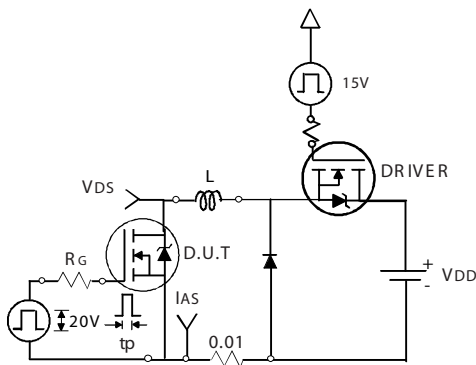
V_{DS} , Drain-Source Voltage (V)

Figure 9. Maximum Safe Operating Area for SDP730



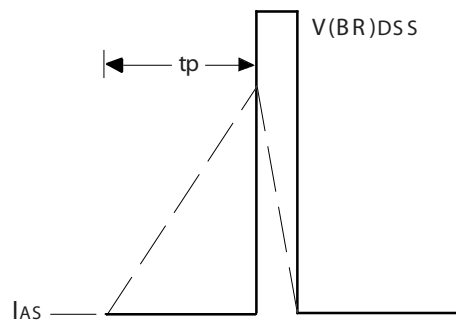
V_{DS} , Drain-Source Voltage (V)

Figure 10. Maximum Safe Operating Area for SDF730



Unclamped Inductive Test Circuit

Figure 11a.



Unclamped Inductive Waveforms

Figure 11b.

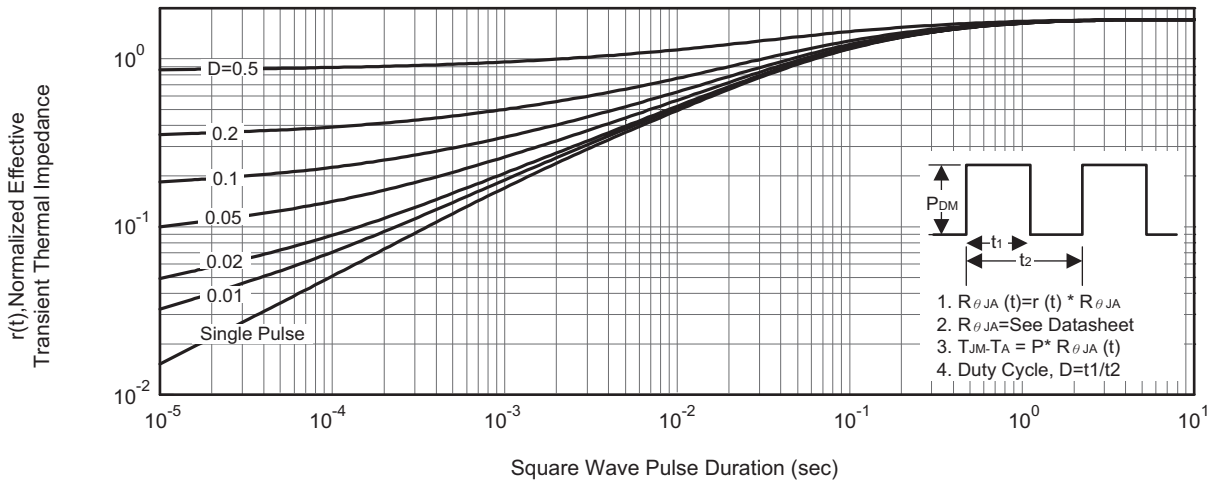


Figure 12.1 Normalized Thermal Transient Impedance Curve for SDP730

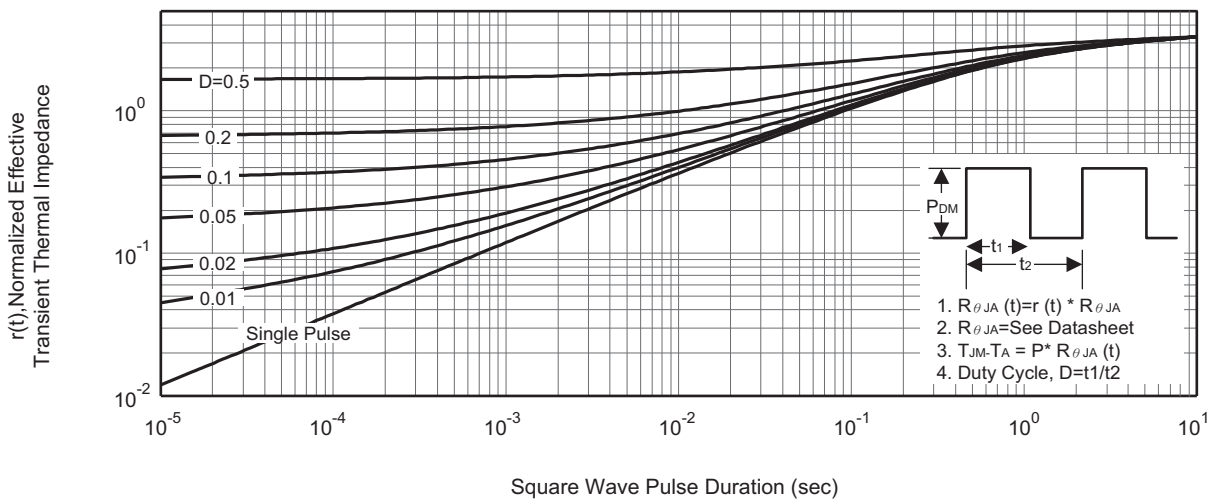
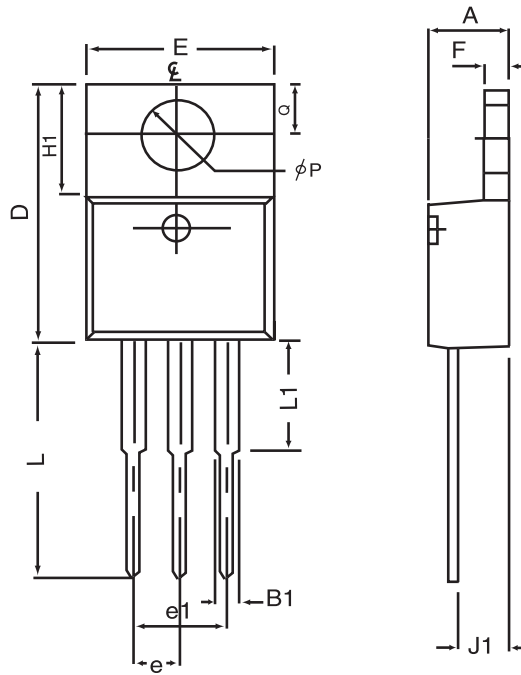


Figure 12.2 Normalized Thermal Transient Impedance Curve for SDF730

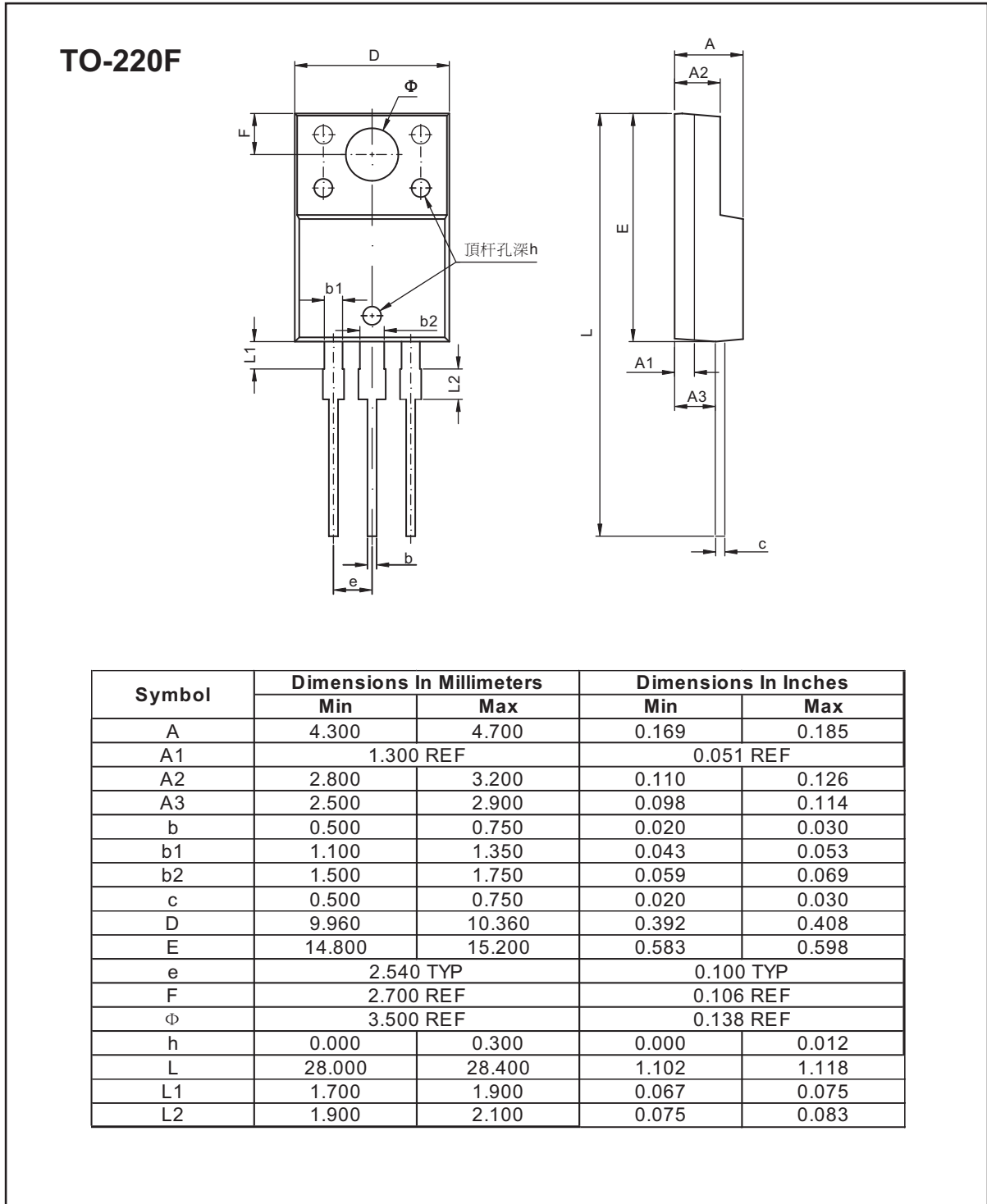
PACKAGE OUTLINE DIMENSIONS

TO-220



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.32	4.80	0.170	0.189
B1	1.27	1.65	0.050	0.630
D	14.6	16.00	0.575	0.610
E	9.70	10.41	0.382	0.410
e	2.34	2.74	0.092	0.108
e1	4.68	5.48	0.184	0.216
F	1.14	1.40	0.045	0.055
H1	5.97	6.73	0.235	0.265
J1	2.20	2.79	0.087	0.110
L	12.88	14.22	0.507	0.560
L1	3.00	6.35	0.120	0.250
phi P	3.50	3.94	0.138	0.155
Q	2.54	3.05	0.100	0.120

PACKAGE OUTLINE DIMENSIONS



TO-220/220F Tube

