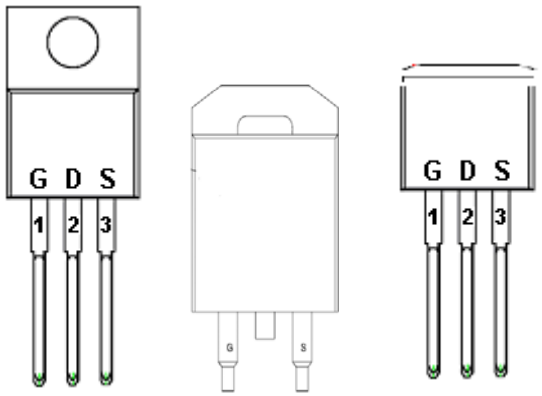
SPN80T06
N-Channel Enhancement Mode MOSFET

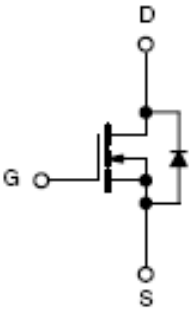
DESCRIPTION
The SPN80T06 is the N-Channel enhancement mode power field effect transistor which is produced using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suitable for synchronous rectifier application, notebook computer power management and other battery powered circuits.

APPLICATIONS
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier

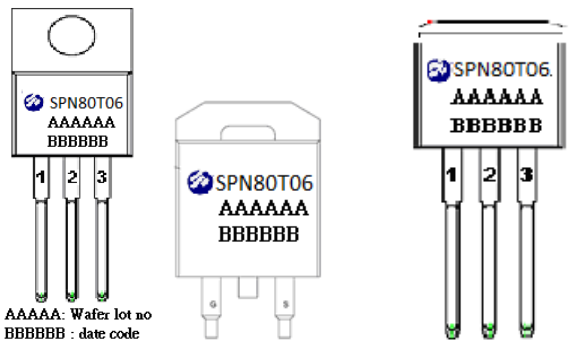
FEATURES
- 60V/80A, $R_{DS(ON)}$= 8mΩ@V_{GS}= 10V
  $R_{DS(ON)}$= 10mΩ@V_{GS}= 5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- TO-220-3L/TO-263-2L/TO-262-3L package design

PIN CONFIGURATION
TO-220-3L **TO-263-2L** **TO-262-3L**





PART MARKING
TO-220-3L **TO-263-2L** **TO-262-3L**



AAAAA: Wafer lot no
BBBBBB : date code

SPN80T06
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	D	Drain
3	S	Source

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN80T06T220TGB	TO-220-3L	SPN80T06
SPN80T06T262RGB	TO-263-2L	SPN80T06
SPN80T06K262TGB	TO-262-3L	SPN80T06

※ SPN80T06T220TGB : Tube ; Pb – Free ; Halogen - Free
※ SPN80T06T262RGB : Tape&Reel ; Pb – Free ; Halogen - Free
※ SPN80T06K262TGB : Tube ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		VDSS	60	V
Gate –Source Voltage		VGSS	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	80	A
	T_A=70℃		55	
Pulsed Drain Current		I_{DM}	320	A
Power Dissipation	T_A=25℃	P_D	268	W
	T_A=70℃		134	
Avalanche Energy with Single Pulse (Tj=25℃, L = 1mH , I_{AS} = 22A , V_{DS} =100V.)		EAS	320	mJ
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	62.5	℃/W

SPN80T06
N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		3.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			10	uA
		V_{DS}=48V, V_{GS}=0V T_J = 150 °C			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=30A		6.5	8	mΩ
		V_{GS}= 5V,I_D=20A		8.5	10	
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS} =0V			1.0	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=10V I_D = 30A		76		nC
Gate-Source Charge	Q_{gs}			17		
Gate-Drain Charge	Q_{gd}			19		
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V f=1MHz		3500		pF
Output Capacitance	C_{oss}			319		
Reverse Transfer Capacitance	C_{rss}			236		
Turn-On Time	$t_{d(on)}$	V_{DD}=30V, R_L=1Ω V_{GEN}=10V, R_G=3Ω		18		nS
	t_r			35		
Turn-Off Time	$t_{d(off)}$			44		
	t_f			23		

TYPICAL CHARACTERISTICS

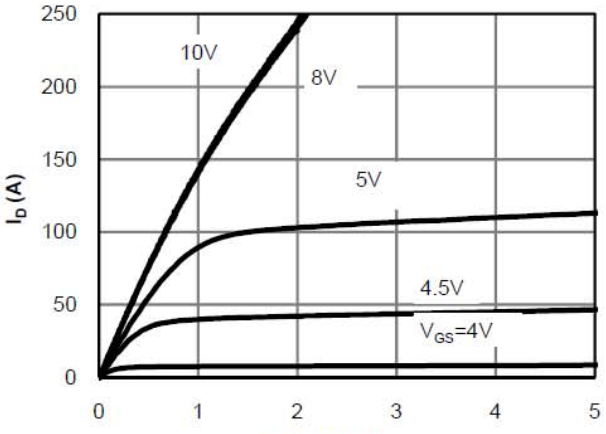


Figure 1: On-Region Characteristics

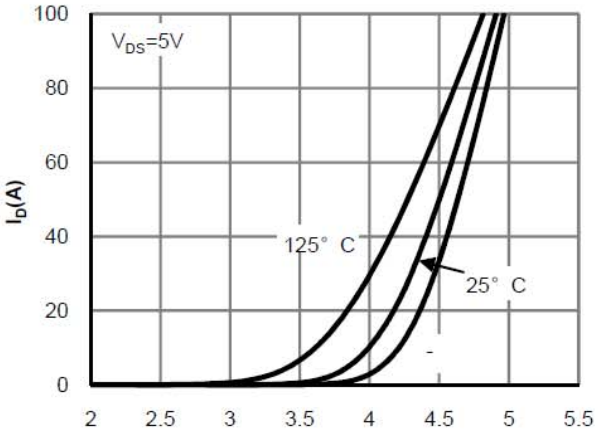


Figure 2: Transfer Characteristics

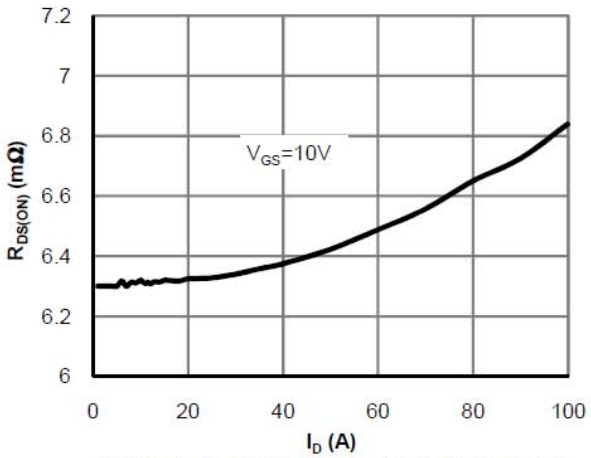


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

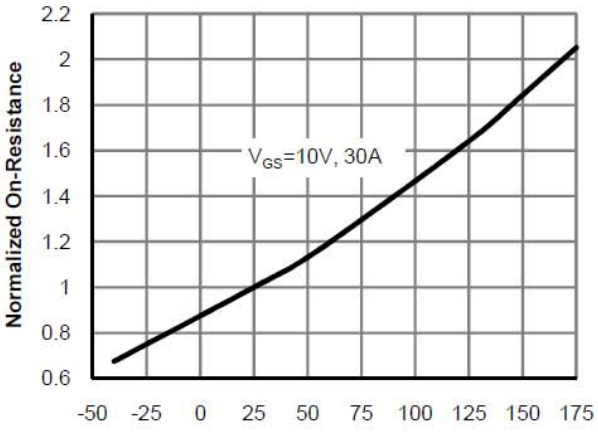


Figure 4: On-Resistance vs. Junction Temperature

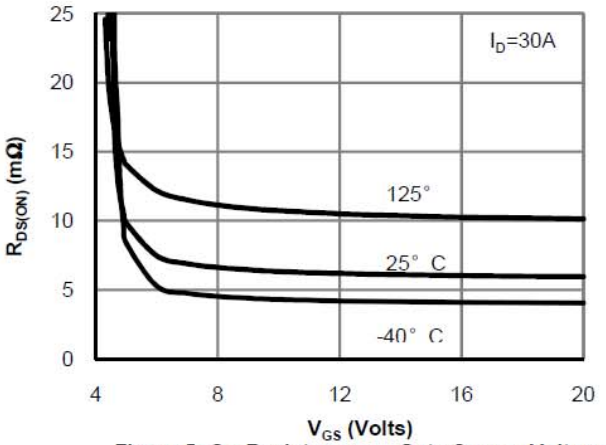


Figure 5: On-Resistance vs. Gate-Source Voltage

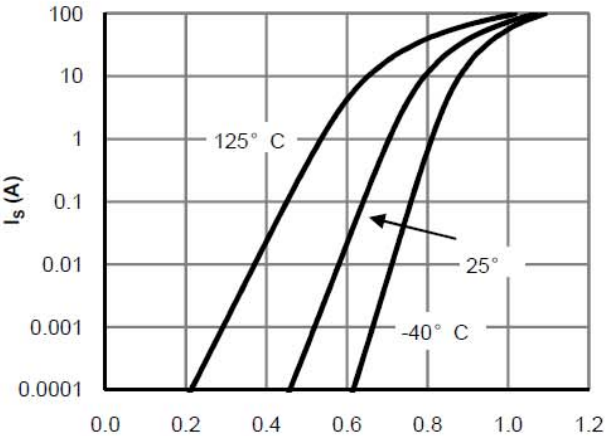


Figure 6: Body-Diode Characteristics

TYPICAL CHARACTERISTICS

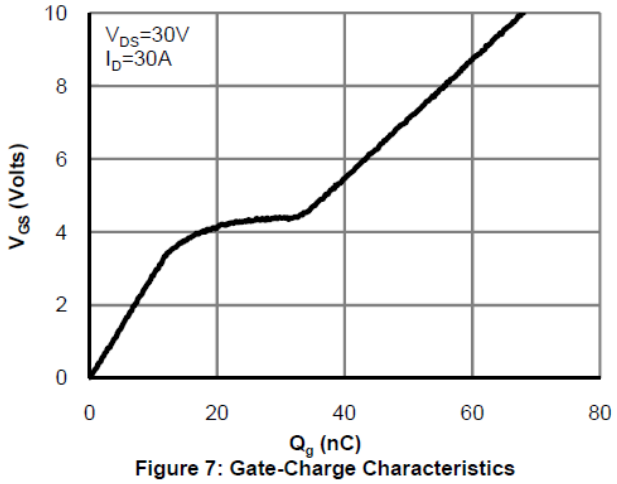


Figure 7: Gate-Charge Characteristics

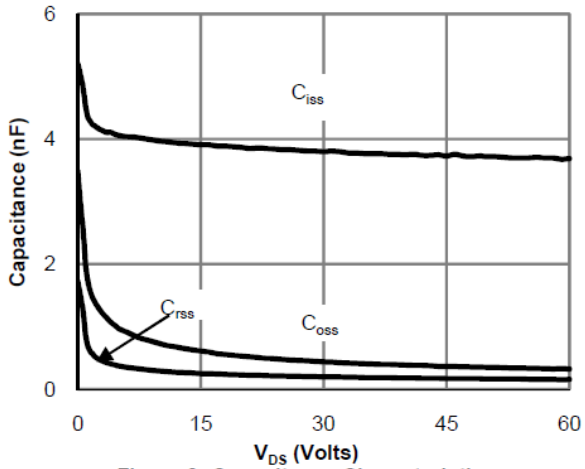


Figure 8: Capacitance Characteristics

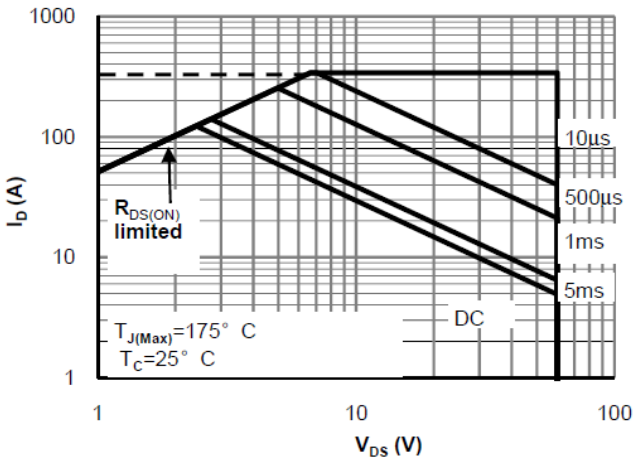


Figure 9: Maximun Forward Biased Safe Operating Area (Note F)

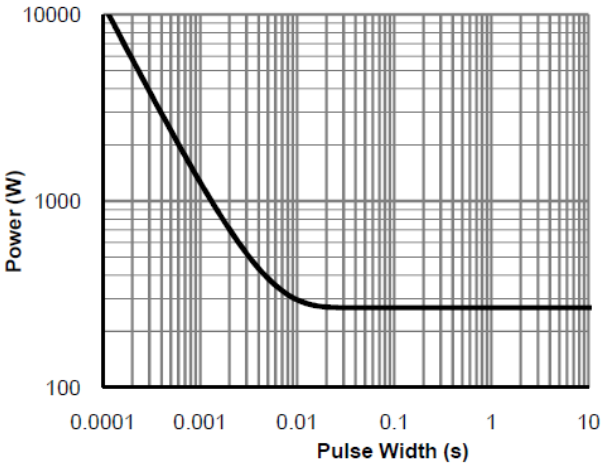


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

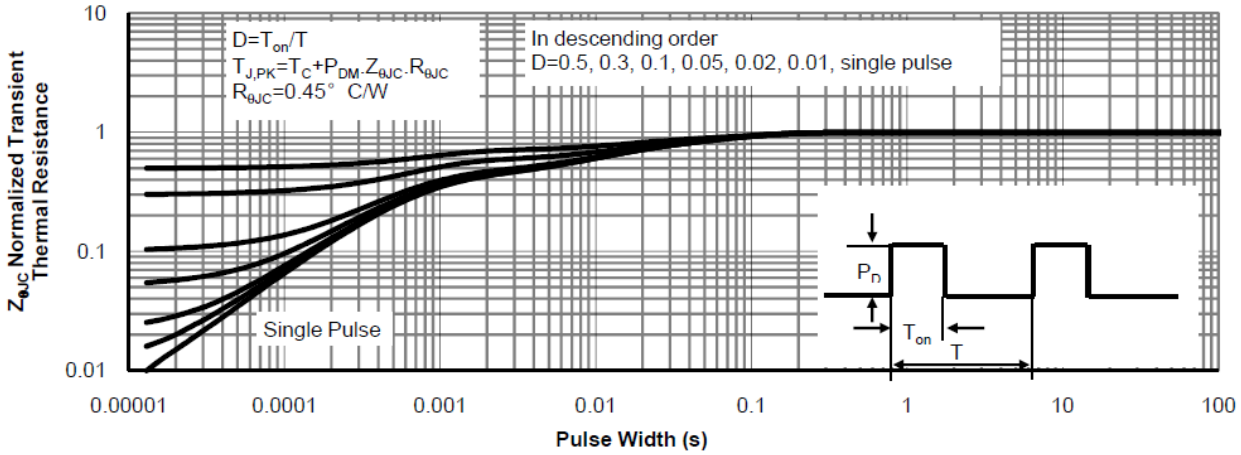
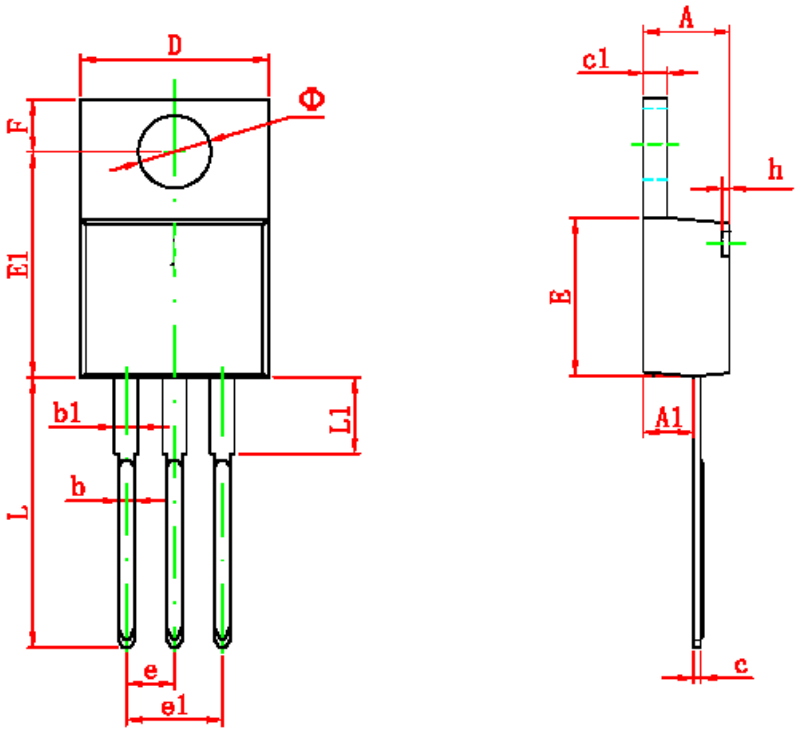


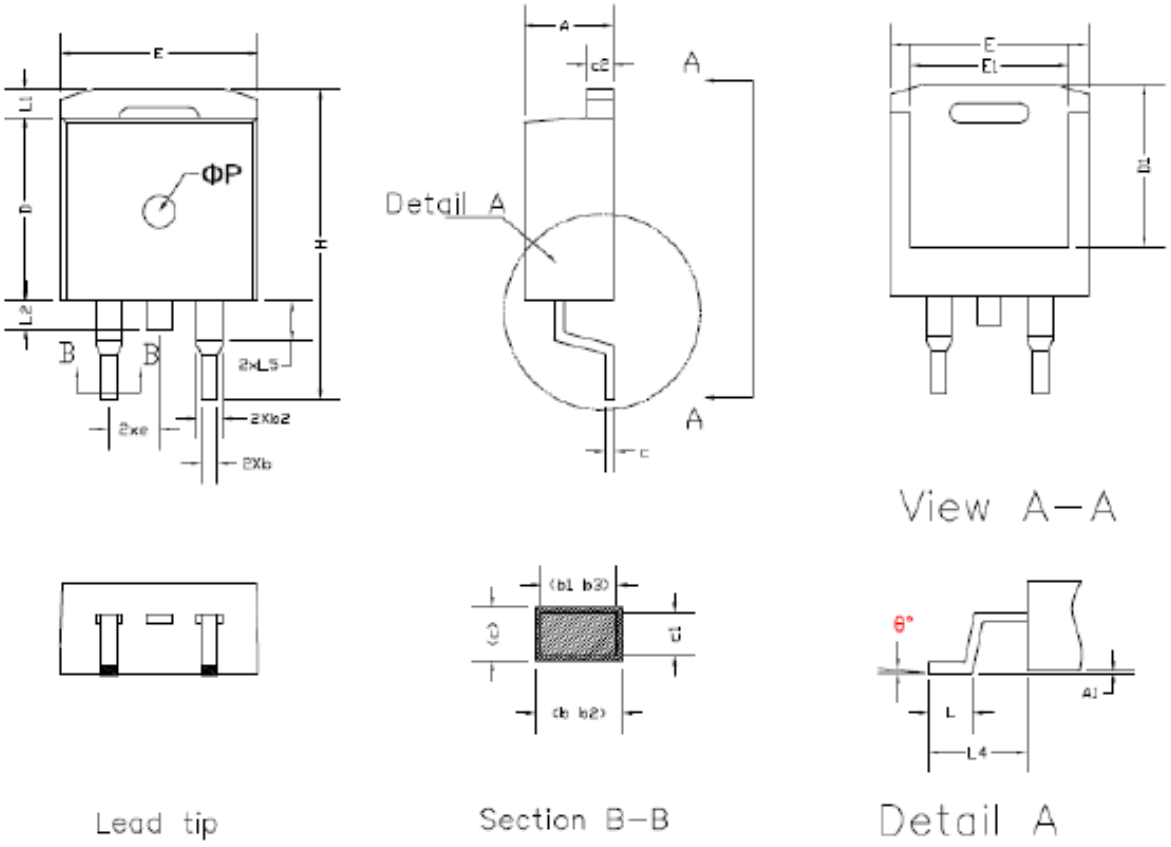
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

TO-220-3L PACKAGE OUTLINE



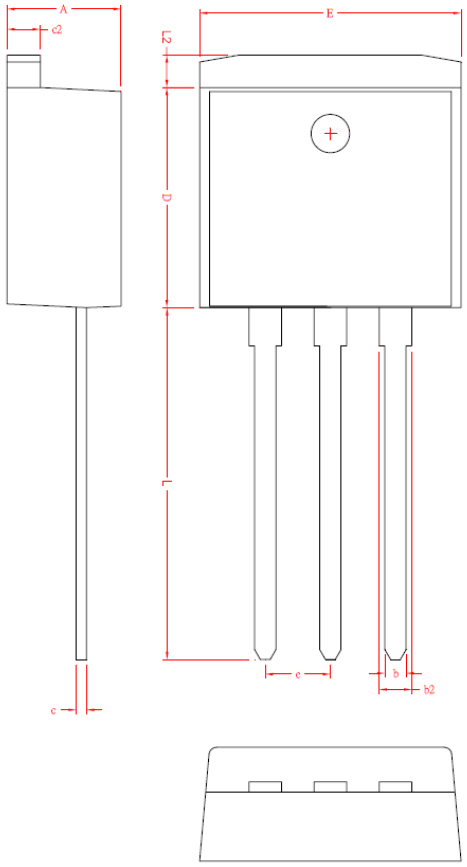
	Millimeter		Inch	
Symbol	Min	Max	Min	Max
A	4.4	4.6	0.173	0.181
A1	2.23	2.53	0.088	0.100
b2	0.75	0.85	0.030	0.033
b1	1.17	1.42	0.046	0.056
c2	0.4	0.6	0.016	0.024
c1	1.2	1.4	0.047	0.055
D	9.85	10.15	0.388	0.400
E	8.96	9.46	0.353	0.372
E1	15.5	15.95	0.610	0.628
e	2.54REF		0.1REF	
e1	5.08REF		0.2REF	
F	2.7	2.9	0.106	0.114
h	0	0.3	0.000	0.012
L	12.7	13.65	0.500	0.537
L1		3.2		0.126

TO-263-2L PACKAGE OUTLINE



TO-263 Dimension									
Symbol	Millimeters		Inches		Symbol	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	4.400	4.600	0.173	0.181	E1	7.850	8.150	0.309	0.321
A1	0.010	0.200	0.000	0.008	e	2.540REF		0.100REF	
b	0.750	0.850	0.030	0.033	L	2.350	2.750	0.092	0.108
b2	1.170	1.450	0.046	0.057	L1	4.850	5.150	0.187	0.203
c	0.400	0.600	0.016	0.024	L3	1.200	1.600	0.047	0.062
c2	1.200	1.400	0.047	0.055	L4	0.700	1.400	0.051	0.058
D	8.950	9.450	0.352	0.372	L5	0.000	3.200	0.000	0.126
D1	8.000	8.400	0.315	0.331	H	15.450	15.850	0.000	0.126
E	9.850	10.150	0.388	0.400	ΦP	1.000	2.500	0.039	0.098
θ°	0	8	--	--	--	--	--	--	--

TO-262-3L PACKAGE OUTLINE



	Millimeter		Inch	
Symbol	Min	Max	Min	Max
A	4.4	4.8	0.173	0.189
b	0.76	1	0.030	0.039
D	8.6	9	0.339	0.354
c	0.36	0.5	0.014	0.020
E	9.8	10.4	0.386	0.409
c2	1.25	1.45	0.049	0.057
b2	1.17	1.47	0.046	0.058
L	13.25	14.25	0.522	0.561
e	2.54REF		0.1REF	
L2	1.27REF		0.05REF	

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