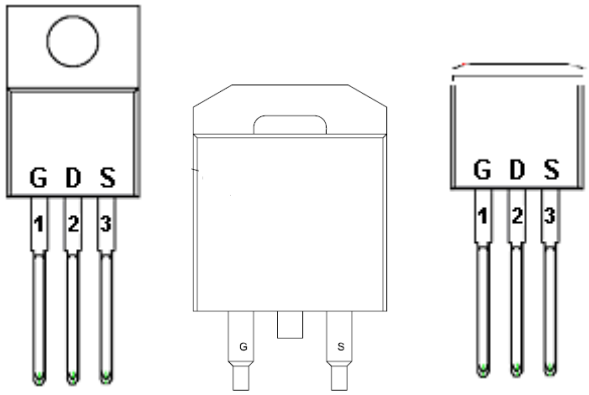
SPN65T10
N-Channel Enhancement Mode MOSFET

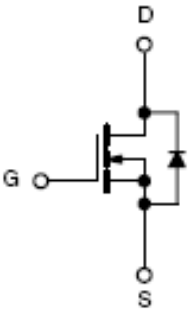
DESCRIPTION
The SPN65T10 is the N-Channel enhancement mode power field effect transistor which is produced using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suitable for synchronous rectifier application, Motor control power management and other Power Tool circuits. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

FEATURES
- 100V/68A, $R_{DS(ON)}$= 14mΩ@V_{GS}= 10V
- 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

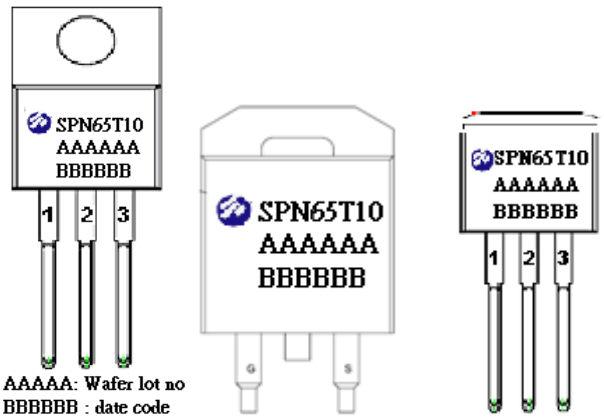
APPLICATIONS
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Power Tool
- Motor Control

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

SPN65T10
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
SPN65T10T220TGB	TO-220-3L	SPN65T10
SPN65T10T262RGB	TO-263-2L	SPN65T10
SPN65T10K262TGB	TO-262-3L	SPN65T10

※ SPN65T10T220TGB : Tube ; Pb – Free ; Halogen - Free
※ SPN65T10T262RGB : Tape&Reel ; Pb – Free ; Halogen - Free
※ SPN65T10K262TGB : Tube ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	68	A
	T_A=70℃		45	
Pulsed Drain Current		I_{DM}	260	A
Power Dissipation	T_A=25℃	P_D	125	W
	T_A=70℃		3.35	
Avalanche Energy with Single Pulse (Tj=25℃, L = 1mH , I_{AS} = 22A , V_{DS} =100V.)		EAS	240	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

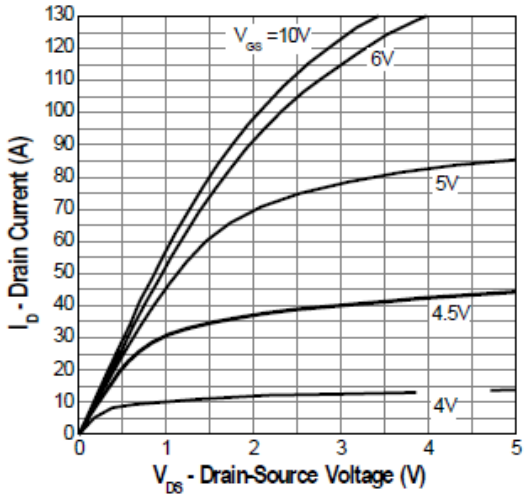
ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

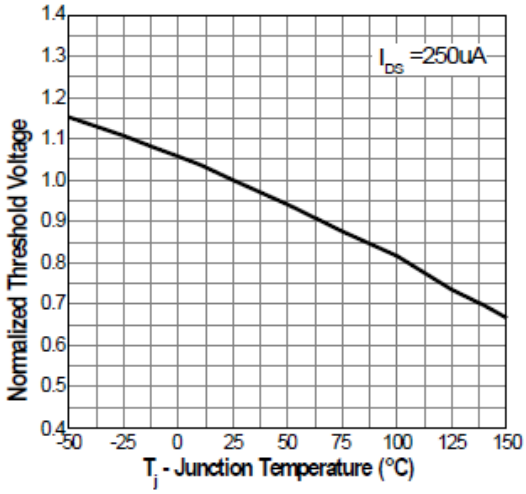
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.0		4.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V			10	uA
		V_{DS}=80V,V_{GS}=0V T_J = 150 ℃			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=45A			14	mΩ
Diode Forward Voltage	V_{SD}	I_S=45A,V_{GS} =0V			1.3	V
Dynamic						
Total Gate Charge	Qg	V_{DS}=80V,V_{GS}=4.5V I_D= 30A		57		nC
Gate-Source Charge	Qgs			12		
Gate-Drain Charge	Qgd			17.5		
Input Capacitance	Ciss	V_{DS}=25V_{GS}=0V f=1MHz		2920		pF
Output Capacitance	Coss			261		
Reverse Transfer Capacitance	Crss			162		
Turn-On Time	td(on)	V_{DD}=50V,R_L=1.6Ω I_D≡30A,V_{GEN}=10V R_G=10Ω		15		nS
	tr			13		
Turn-Off Time	td(off)			55		
	tf			21		

TYPICAL CHARACTERISTICS

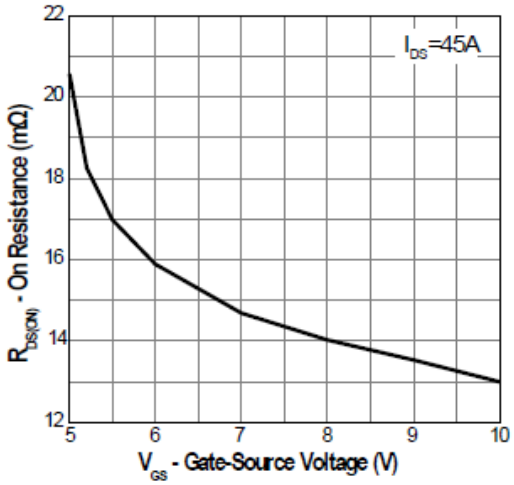
Output Characteristics



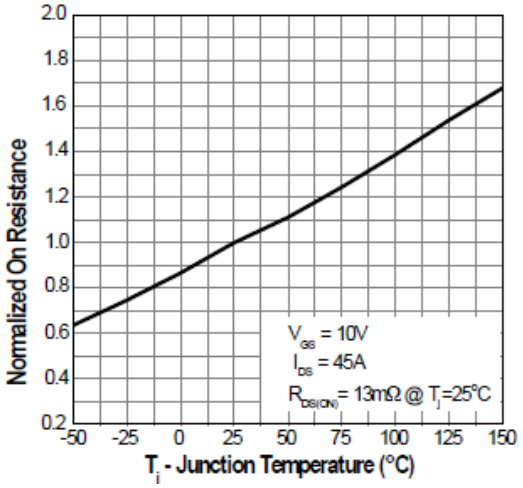
Gate Threshold Voltage vs. Temperature



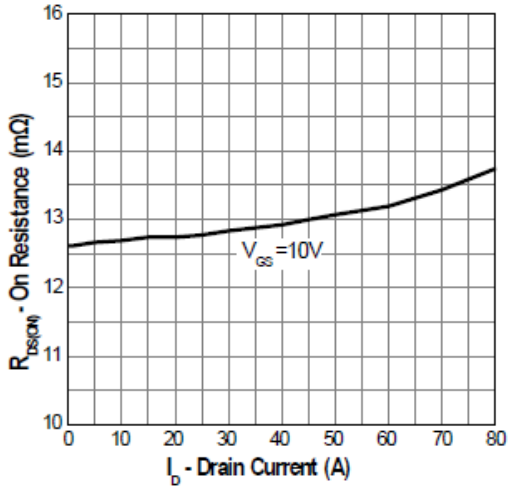
On-Resistance vs. Gate-Source Voltage



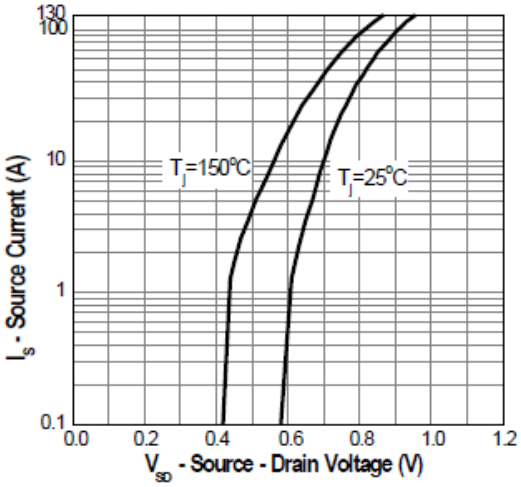
On-Resistance vs. Temperature



On-Resistance vs. Drain Current

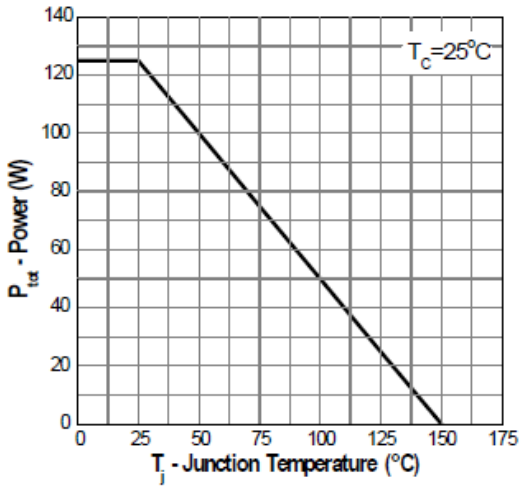


Source-Drain Diode Forward Characteristics

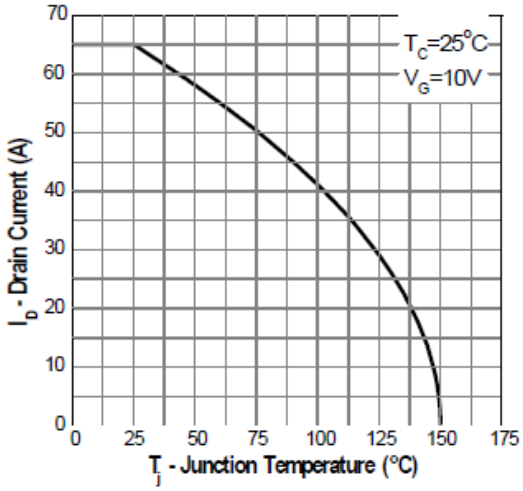


TYPICAL CHARACTERISTICS

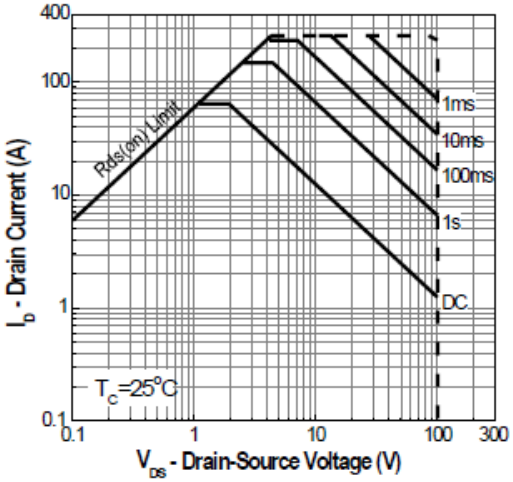
Power Dissipation



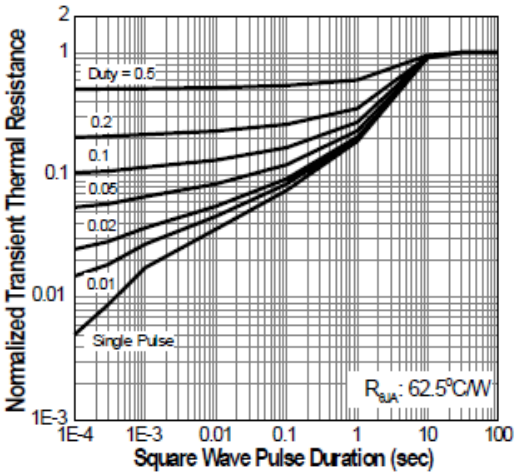
Drain Current vs. Temperature



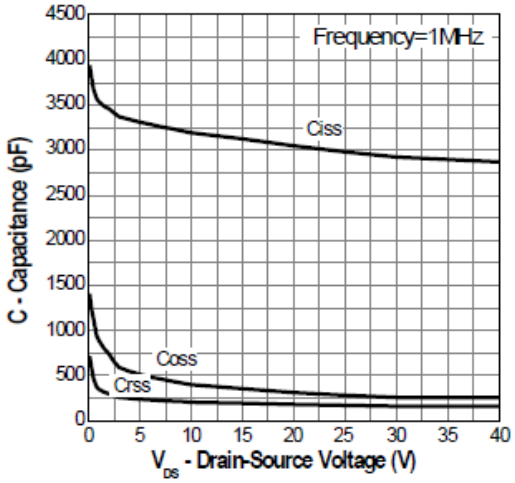
Safe Operation Area



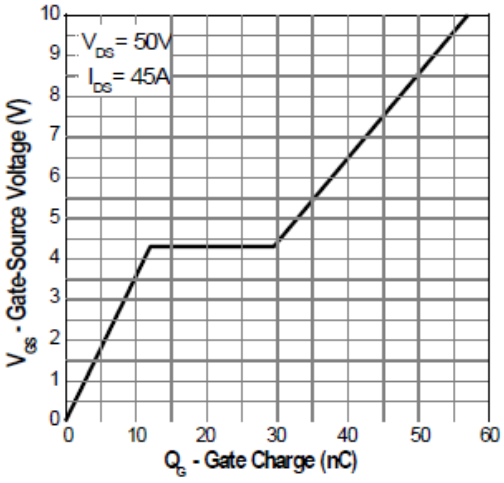
Transient Thermal Impedance



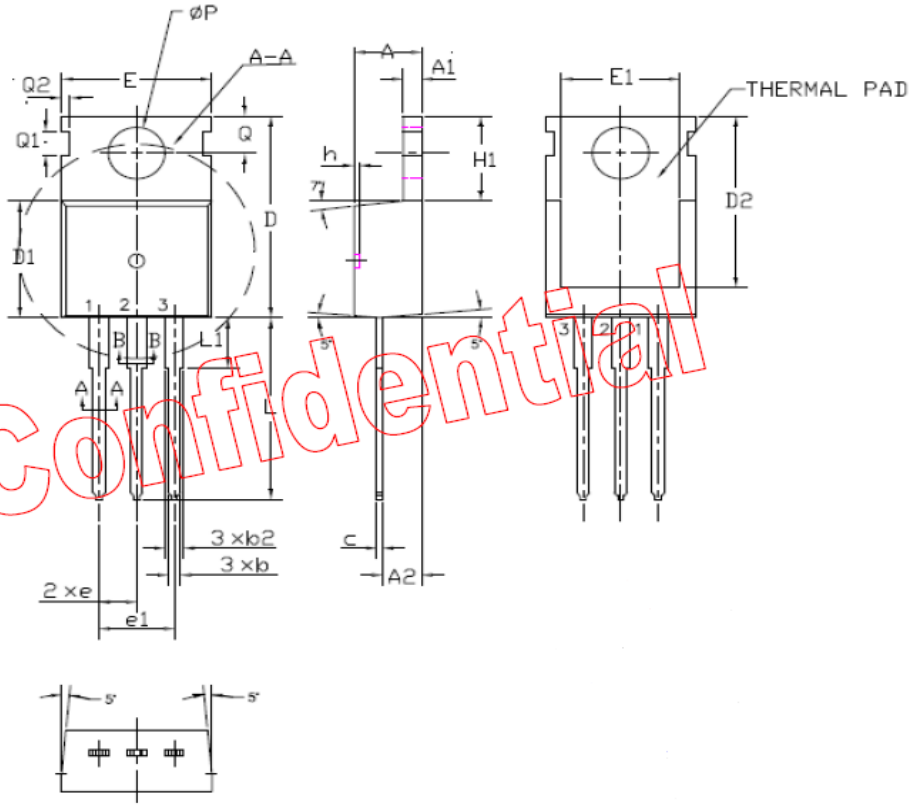
Capacitance Characteristics



Gate-Charge Characteristics



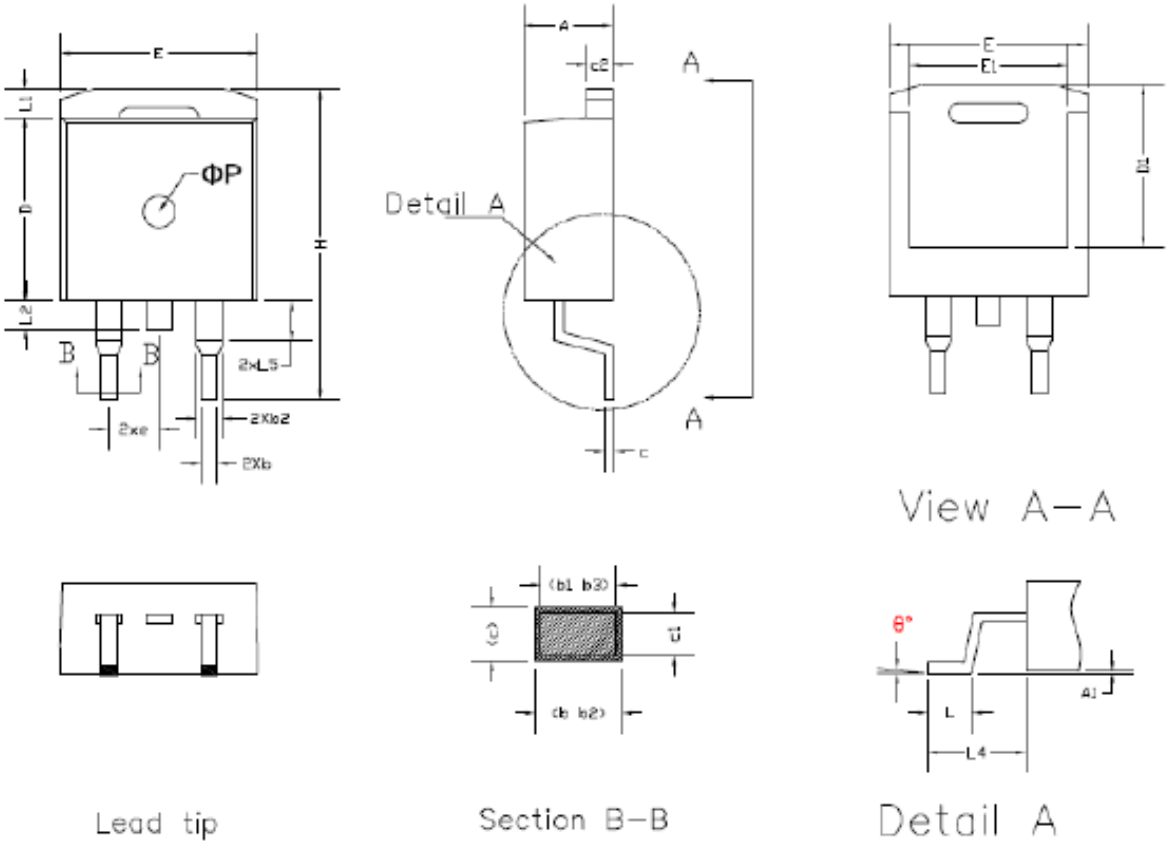
TO-220-3L PACKAGE OUTLINE



SYMBOL	VARIATION			
	TO-220CB			
	Millimeters		Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
A1	1.20	1.40	0.047	0.055
A2	2.23	2.53	0.088	0.100
b	0.70	0.90	0.028	0.035
b2(备注 1)	1.17	1.55	0.046	0.061
c	0.40	0.60	0.016	0.024
D	15.55	15.95	0.612	0.628
D1	8.95	9.45	0.352	0.372
D2	13.20	13.60	0.520	0.535
E	9.85	10.15	0.388	0.400
E1	7.85	8.15	0.309	0.321
e	2.54REF		0.100REF	
e1	5.08REF		0.200REF	
H1	6.35	6.55	0.250	0.258
h	0.00	0.30	0.000	0.012
L	12.70	13.65	0.500	0.537
L1	2.85REF		0.112	
Q	2.70	2.90	0.106	0.114
Q1	1.62	1.82	0.064	0.072
Q2	0.55	0.75	0.022	0.030
ΦP	3.60	3.75	0.142	0.148

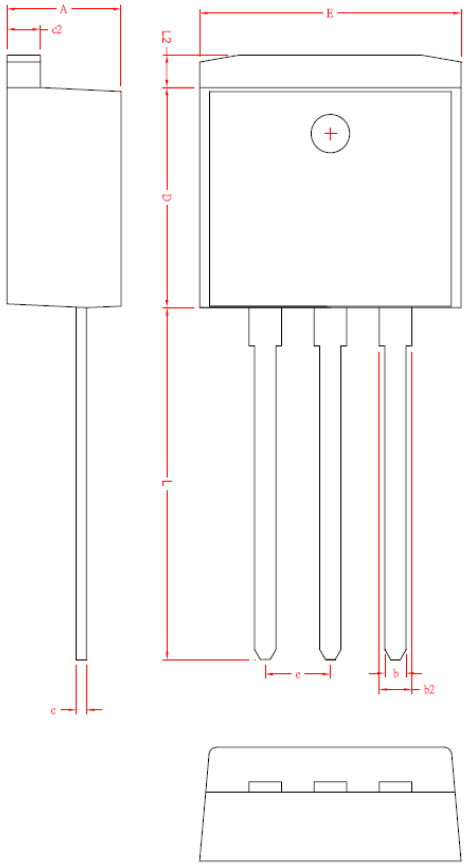
备注 1：锐骏标准为 1.17mm(0.046inch)~1.39mm(0.055inch)。

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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