



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

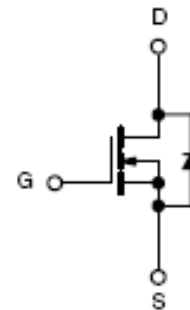
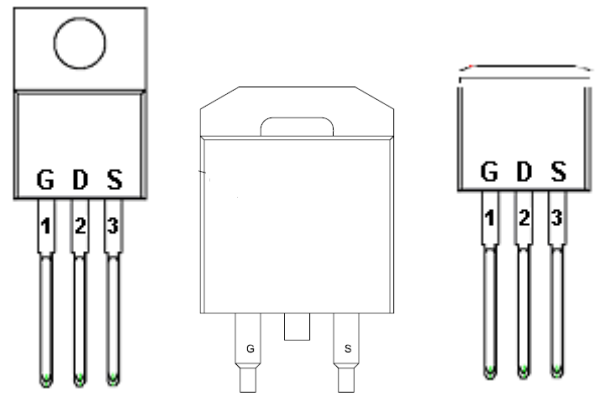
- ◆ 100V/45A, $R_{DS(ON)}=14m\Omega@V_{GS}=10V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-220-3L/TO-263-2L/TO-262-3L package design

APPLICATIONS

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

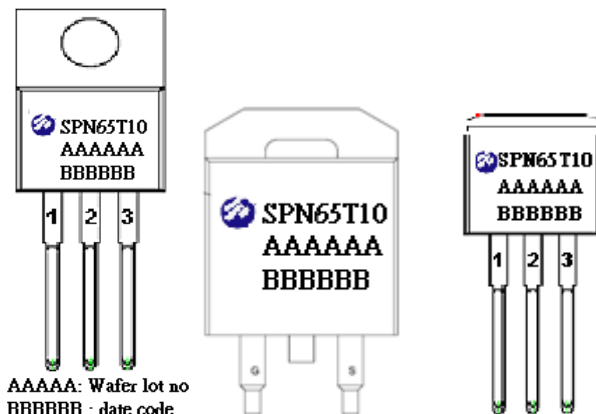
PIN CONFIGURATION

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



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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

ABSOLUTE MAXIMUM RATINGS

(TA=25°C 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°C)	I _D	TA=25°C	68	A
		TA=70°C	45	
Pulsed Drain Current	I _{DM}	260	A	
Power Dissipation	P _D	TA=25°C	125	W
		TA=70°C	3.35	
Avalanche Energy with Single Pulse (T _j =25°C , L = 1mH , I _{AS} = 22A , V _{DS} =100V.)	EAS	240	mJ	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	62.5	°C/W	



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			10	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J = 150^\circ C$			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	Q_g	$V_{DS}=80V, V_{GS}=4.5V$ $I_D= 30A$		57		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			17.5		
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1MHz$		2920		pF
Output Capacitance	C_{oss}			261		
Reverse Transfer Capacitance	C_{rss}			162		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, R_L=1.6\Omega$ $I_D=30A, V_{GEN}=10V$ $R_G=10\Omega$		15		nS
	t_r			13		
Turn-Off Time	$t_{d(off)}$			55		
	t_f			21		

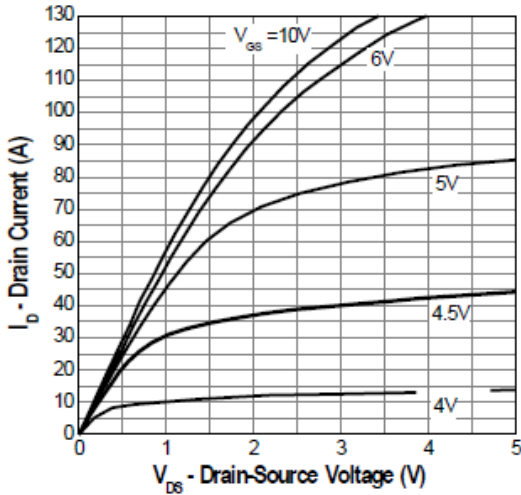


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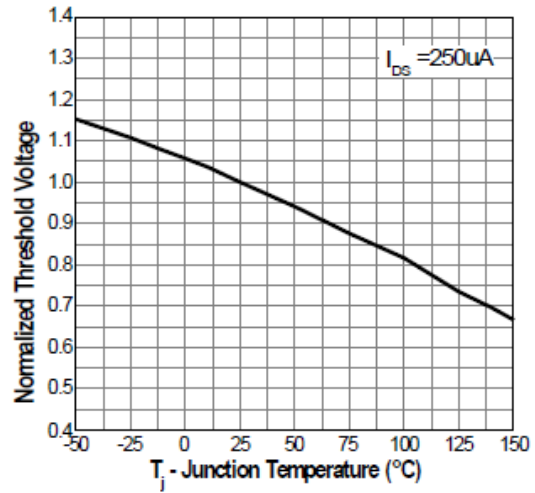
N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

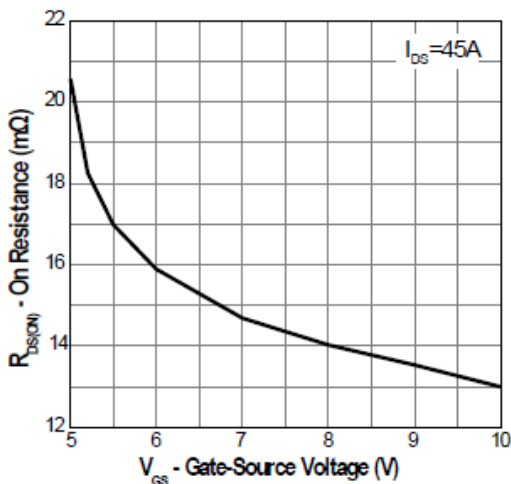
Output Characteristics



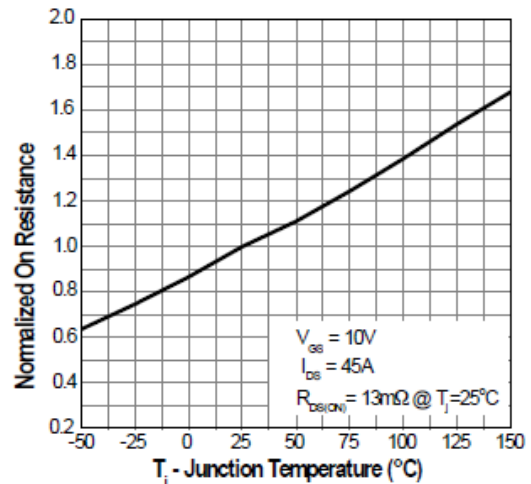
Gate Threshold Voltage vs. Temperature



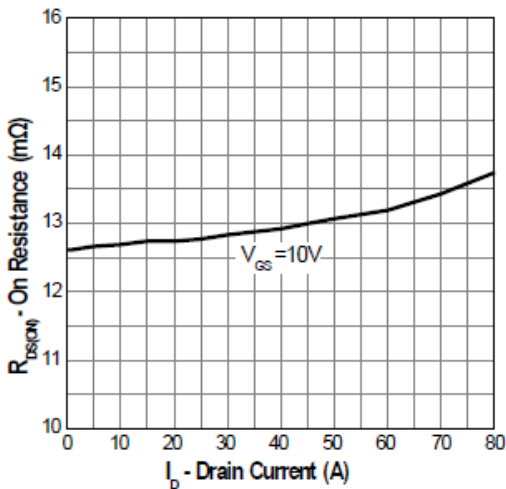
On-Resistance vs. Gate-Source Voltage



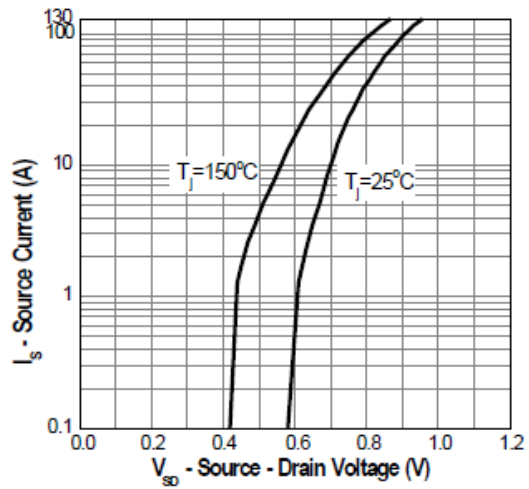
On-Resistance vs. Temperature



On-Resistance vs. Drain Current



Source-Drain Diode Forward Characteristics



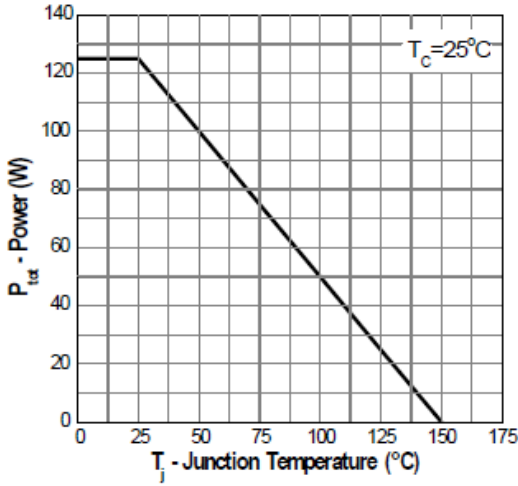


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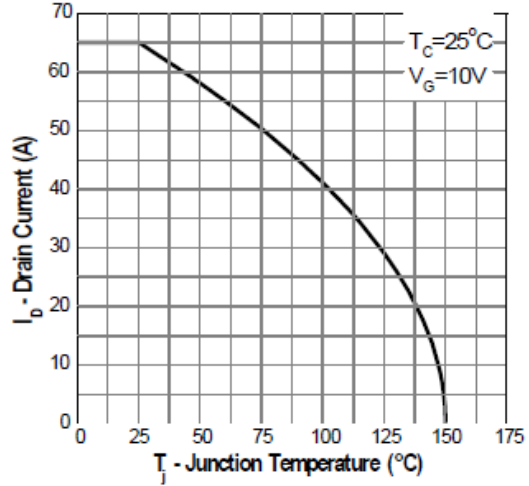
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TYPICAL CHARACTERISTICS

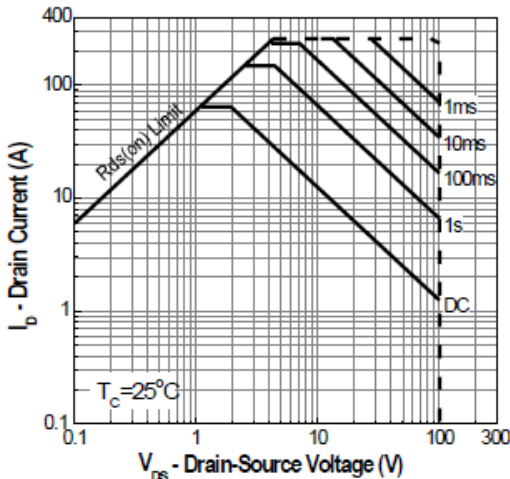
Power Dissipation



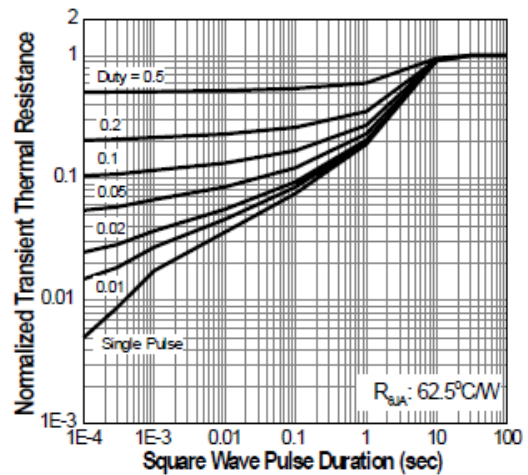
Drain Current vs. Temperature



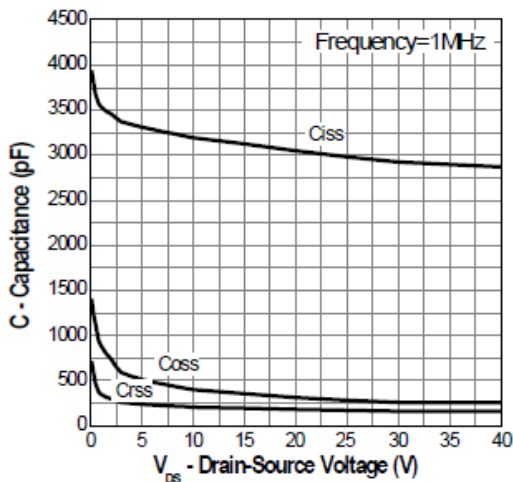
Safe Operation Area



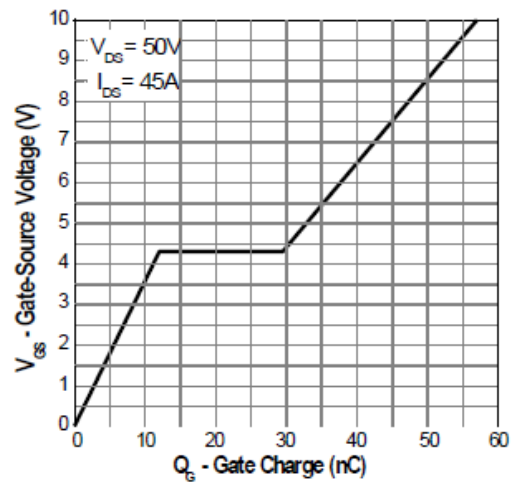
Transient Thermal Impedance



Capacitance Characteristics



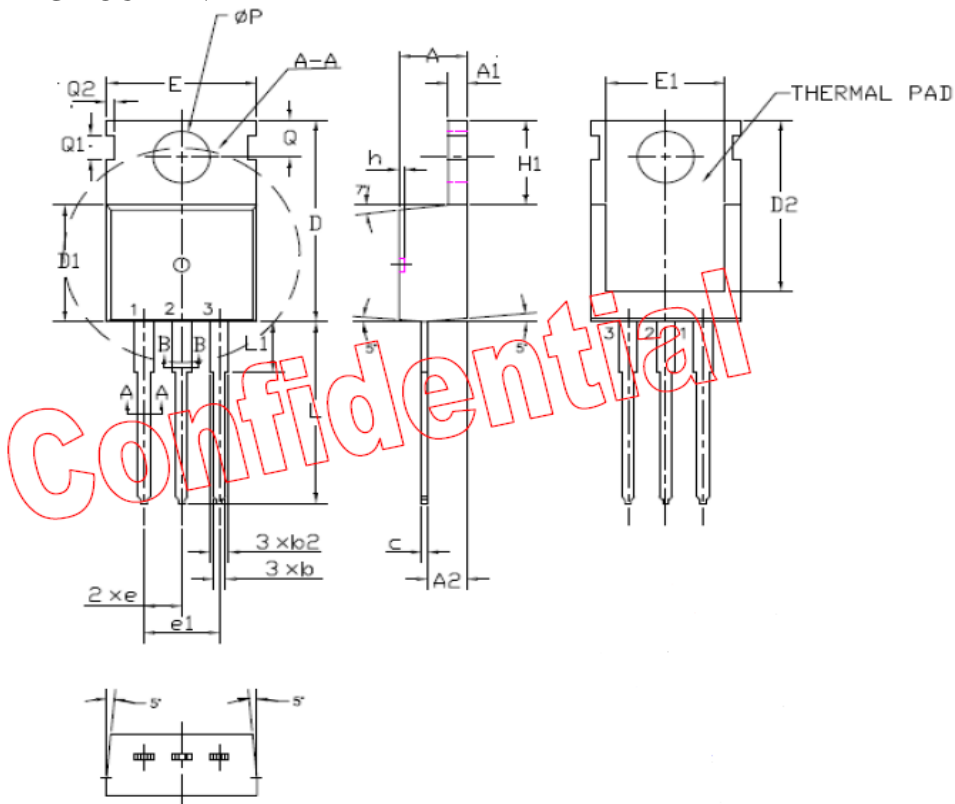
Gate-Charge Characteristics





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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	0.353	0.372
D2	12.20	13.00	0.520	0.533
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

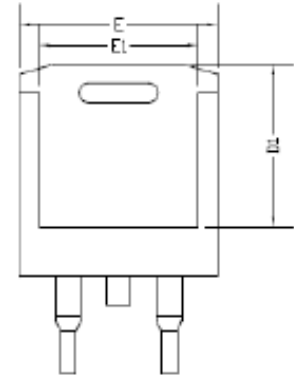
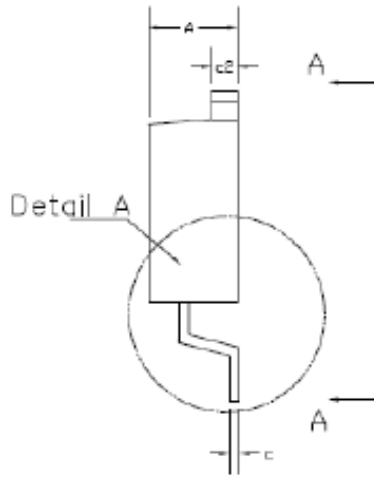
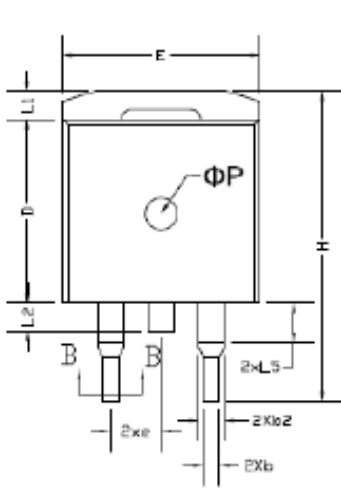
备注 1: 锐角标准为 1.17mm(0.046inch)~1.39mm(0.055inch)。



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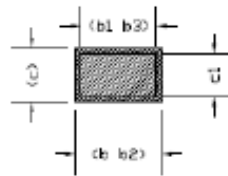
TO-263-2L PACKAGE OUTLINE



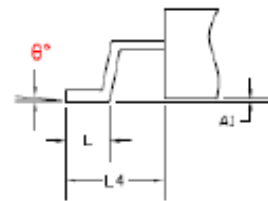
View A-A



Lead tip



Section B-B



Detail A

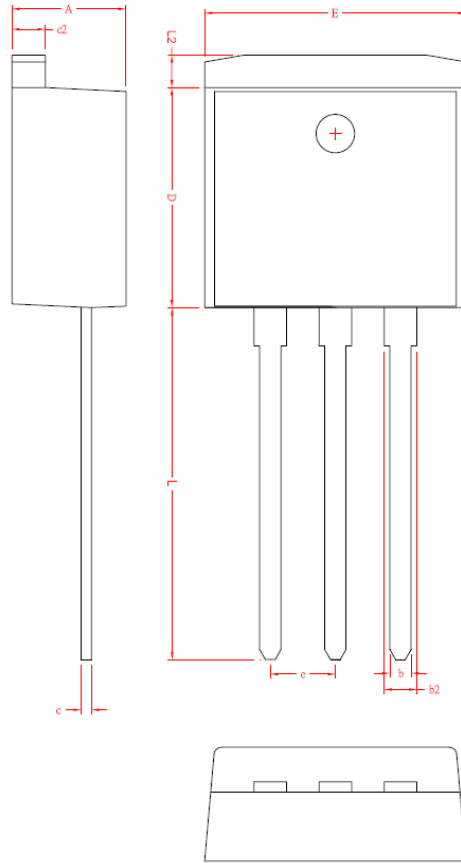
TO-263 Dimension									
Symbol	Millimeters		Inches		Symbol	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	4.400	4.600	0.173	0.181	E1	7.850	8.150	0.309	0.321
A1	0.010	0.200	0.000	0.008	e	2.540REF		0.100REF	
b	0.750	0.850	0.030	0.033	L	2.350	2.750	0.092	0.108
b2	1.170	1.450	0.046	0.057	L1	4.850	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	--	--	--	--	--	--	--



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TO-262-3L PACKAGE OUTLINE



Symbol	Millimeter		Inch	
	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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