★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

RoHS

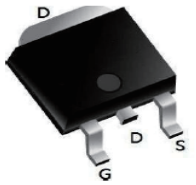
BVDSS	RDSON	ID
60V	6.8mΩ	65A

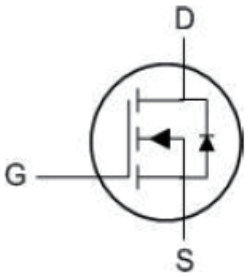
Description

The 65N06 is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 65N06 meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	60	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
$I_{D\ (DC)}$	Drain Current (DC) at Tc=25℃	65	A
$I_{D\ (DC)}$	Drain Current (DC) at Tc=100℃	45	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed **(Note 1)**	260	A
dv/dt	Peak Diode Recovery Voltage	8	V/ns
P_D	Maximum Power Dissipation(Tc=25℃)	75	W
	Derating Factor	0.5	W/℃
E_{AS}	Single Pulse Avalanche Energy **(Note 2)**	300	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃

Thermal Characteristic

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	---	2	℃/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=64V,V_{GS}=0V	---	---	1	μA
I_{DSS}	Zero Gate Voltage Drain Current (Tc=125℃)	V_{DS}=64V,V_{GS}=0V	---	---	10	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	---	---	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=40A	---	6.8	8.2	mΩ
Dynamic Characteristics						
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=15A	15	---	---	S
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1.0MHz	---	2873	---	pF
C_{oss}	Output Capacitance		---	252	---	pF
C_{rss}	Reverse Transfer Capacitance		---	205	---	pF
Q_g	Total Gate Charge	V_{DS}=50V,I_D=40A, V_{GS}=10V	---	56	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	nC
Q_{gd}	Gate-Drain Charge		---	16	---	nC
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V,I_D=2A,R_L=15Ω V_{GS}=10V,R_G=2.5Ω	---	14.5	---	nS
t_r	Turn-on Rise Time		---	24	---	nS
$t_{d(off)}$	Turn-Off Delay Time		---	45	---	nS
t_f	Turn-Off Fall Time		---	22	---	nS
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)		---	65	---	A
I_{SDM}	Pulsed Source-Drain Current(Body Diode)		---	260	---	A
V_{SD}	Forward On Voltage **(Note3)**	T_J=25℃,I_{SD}=40A,V_{GS}=0V	---	0.89	0.99	V
t_{rr}	Reverse Recovery Time **(Note3)**	T_J=25℃,I_F=75A di/dt=100A/μs	---	22	---	nS
Q_{rr}	Reverse Recovery Charge**(Note3)**		---	27	---	nC
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Note :

1Repetitive Rating: Pulse width limited by maximum junction temperature

2.EAS condition:T_J=25°C,V_{DD}=33V,V_G=10V

3.Pulse Test: Pulse Width ⩽ 300μs, Duty Cycle ⩽ 1.5%, R_G=25Ω, Starting T_J=25°C

Typical Performance Characteristics

Figure1: Output Characteristics

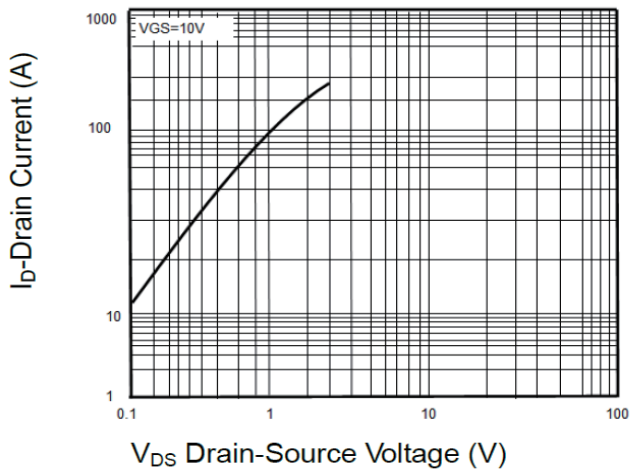


Figure 2: Typical Transfer Characteristics

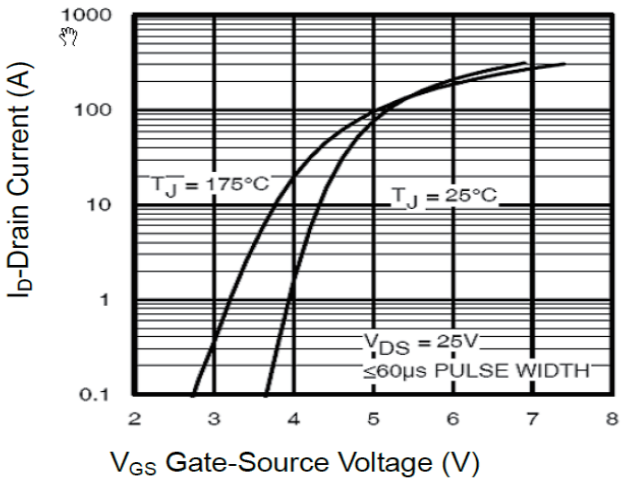


Figure 3:BVDSS vs Junction Temperature

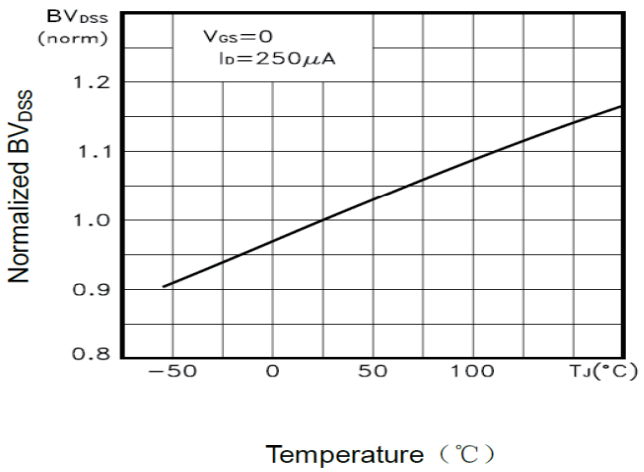


Figure 4: ID vs Junction Temperature

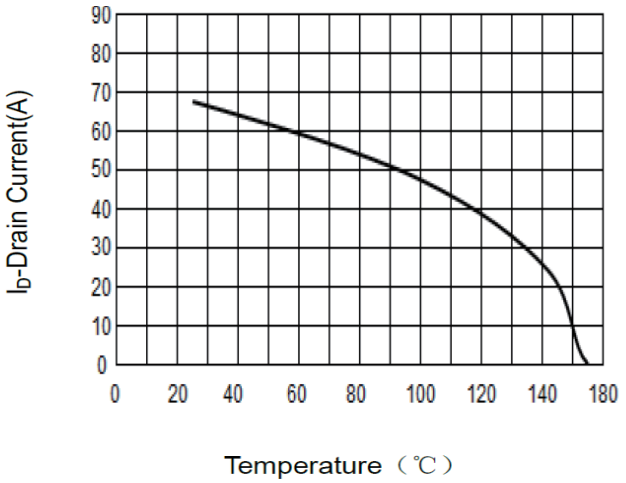


Figure 5: VGS(th) vs Junction Temperature

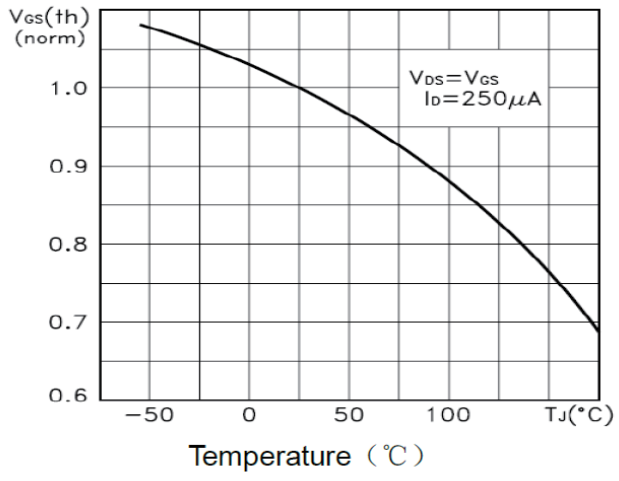
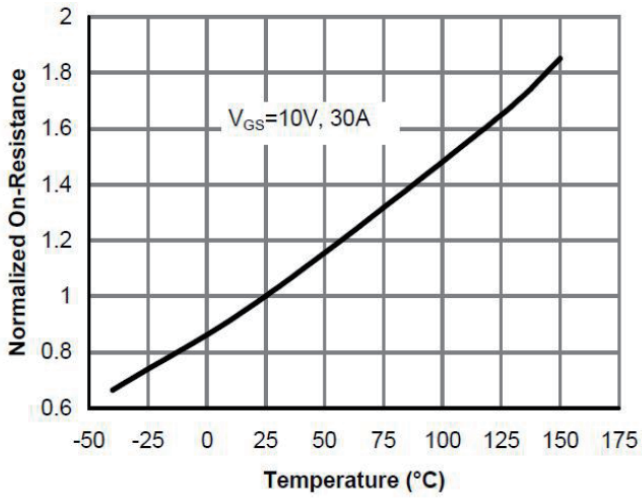


Figure 6: Rdson Vs Junction Temperature



Typical Performance Characteristics

Figure 7: Gate Chargeemperature

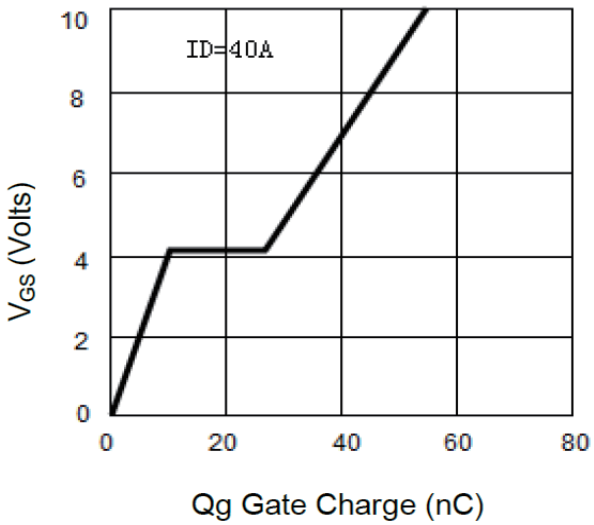


Figure 8:Capacitance vs Vds

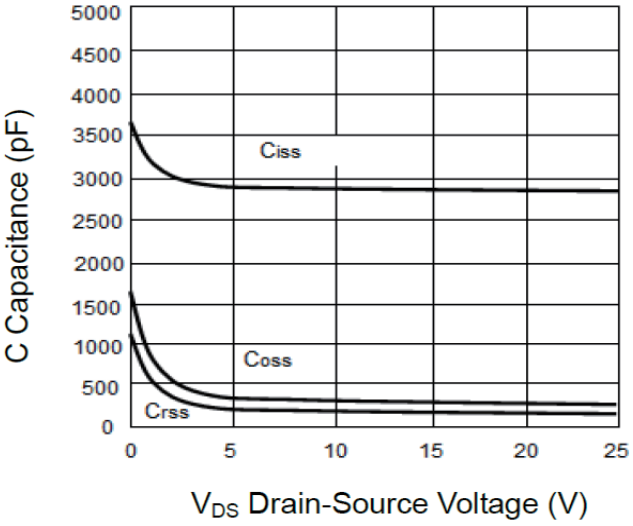
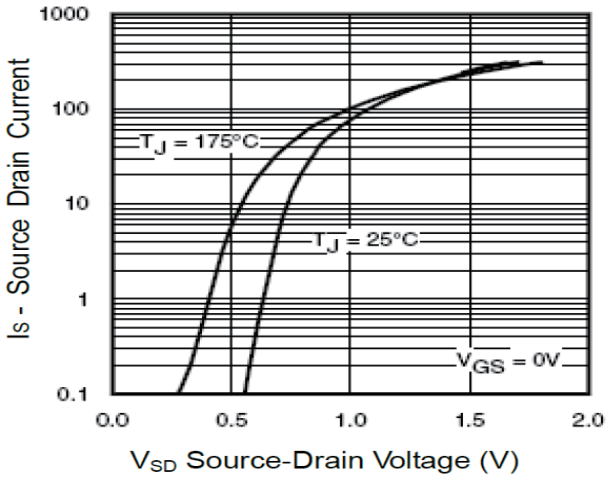


Figure 9: Source- Drain Diode Forward



FFigure 10: Safe Operation Area

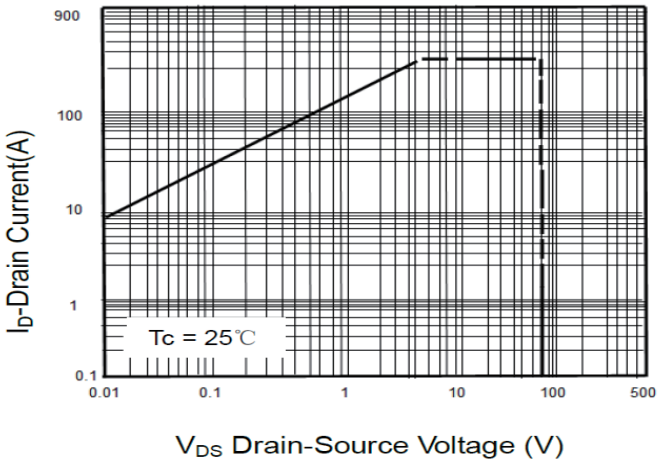
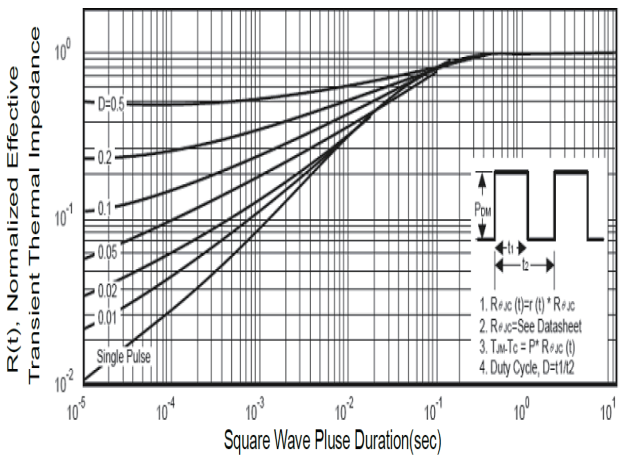
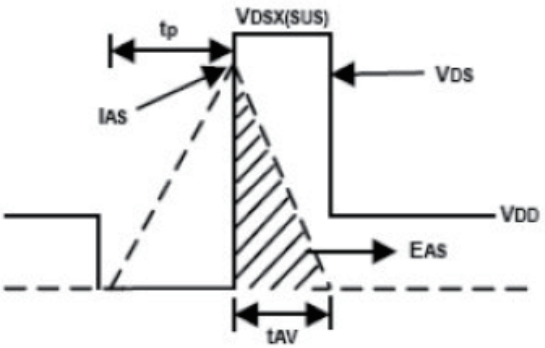


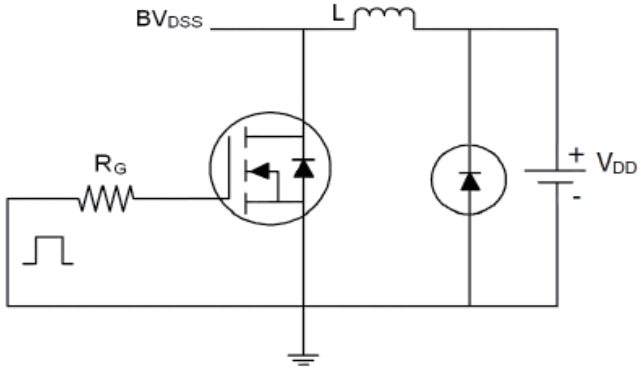
Figure.11: Normalized Maximum Transie



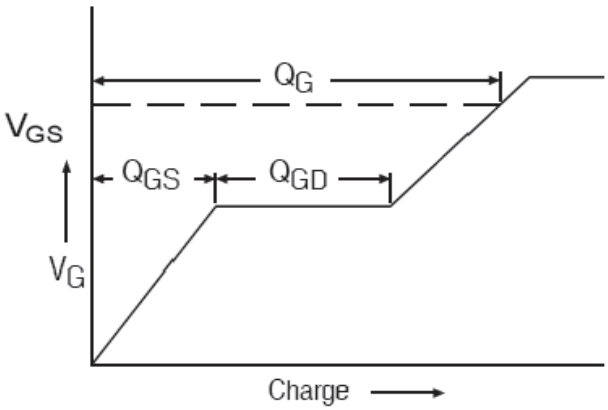
Test Ciruit

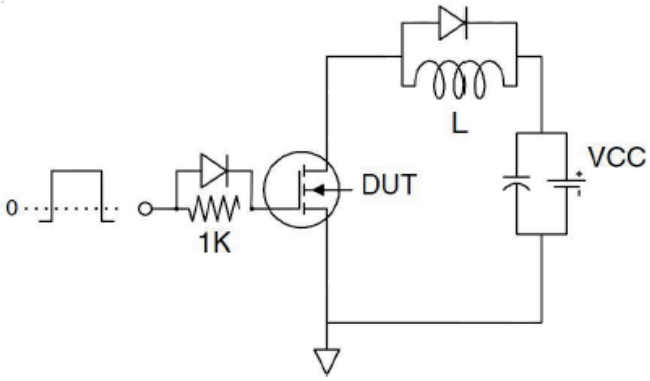
1) E_{AS} Test Circuits



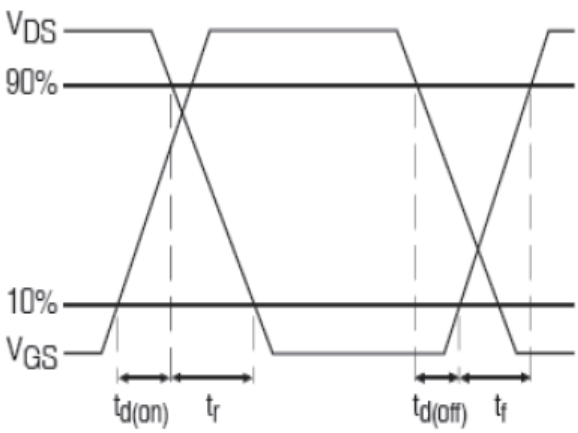


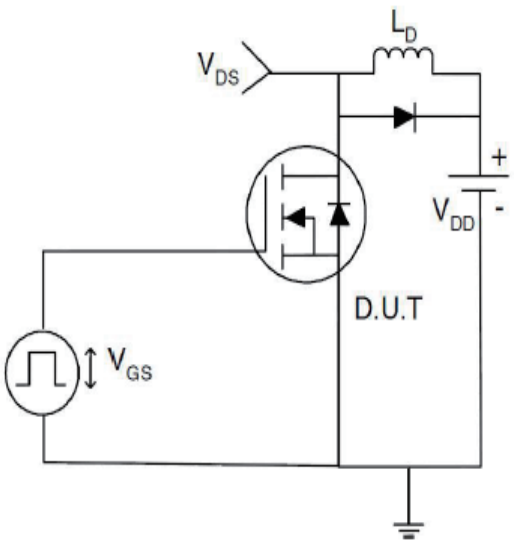
2) Gate Charge Test Circuit:



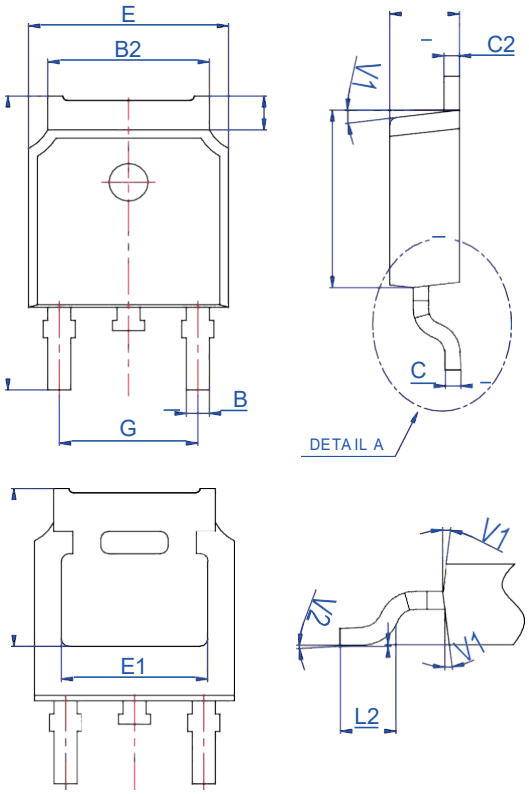


3) Switch Time Test Circuit:



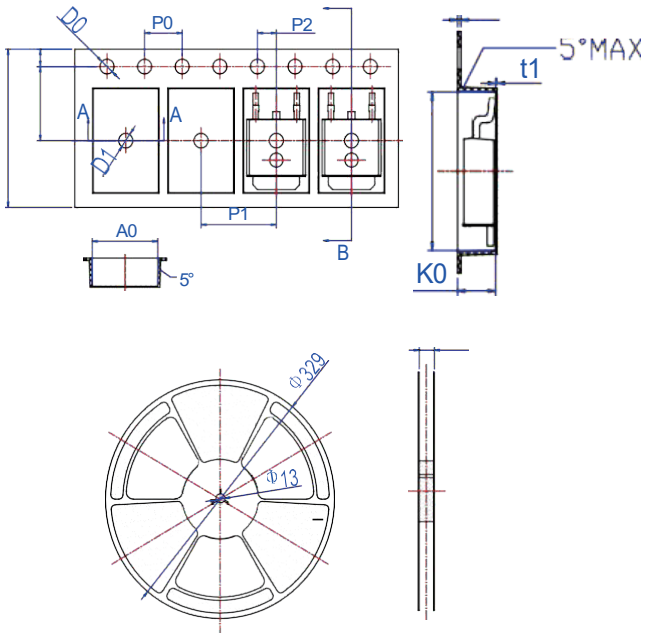


Package Mechanical Data-TO-252-4R



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.1		2.5	0.083		0.098
A2	0		0.1	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.4		0.6	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.9		6.3	0.232		0.248
D1	5.30REF			0.209REF		
E	6.4		6.8	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.5		10.7	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252-4R



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.9	16	16.1	0.626	0.63	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.4	7.5	7.6	0.291	0.295	0.299
D0	1.4	1.5	1.6	0.055	0.059	0.063
D1	1.4	1.5	1.6	0.055	0.059	0.063
P0	3.9	4	4.1	0.154	0.157	0.161
P1	7.9	8	8.1	0.311	0.315	0.319
P2	1.9	2	2.1	0.075	0.079	0.083
A0	6.85	6.9	7	0.27	0.271	0.276
B0	10.45	10.5	10.6	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.1			0.004		
10P0	39.8	40	40.2	1.567	1.575	1.583

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