

## 40V N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- ◇ Surface-mounted package
- ◇ Advanced TRENCH cell design

#### 1.2 Applications

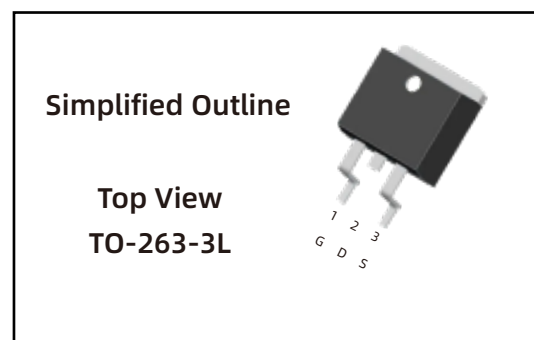
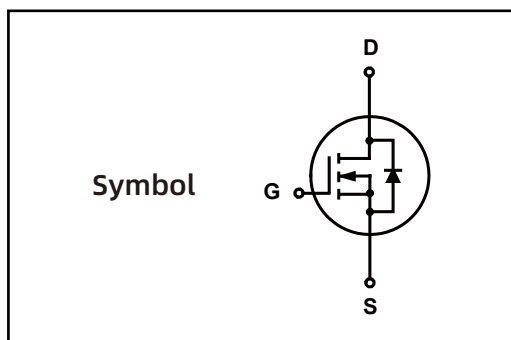
- ◇ LCD TV appliances
- ◇ High power inverter system
- ◇ LCDM appliances

#### 1.3 Quick reference

- ◇  $BV \cong 40\text{ V}$
- ◇  $P_{\text{tot}} \cong 50\text{ W}$
- ◇  $I_D \cong 160\text{ A}$

- ◇  $R_{\text{DS(ON)}} \cong 3.3\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
- ◇  $R_{\text{DS(ON)}} \cong 6.0\text{ m}\Omega @ V_{\text{GS}} = 4.5\text{ V}$

### 2. Pin Description



### 3. Marking Information

Product Name	Marking
LN030N040K	LN030N040K CYWWZZ XXXXXX

## 4. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	40	-	V
$V_{GS}$	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^{***}$	Drain Current ( DC )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	160	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	60	A
$I_{DM}^{*,***}$	Drain Current ( Pulsed )	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	160	A
$P_{tot}$	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	50	W
$T_{stg}$	Storage Temperature		-55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_S$	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	160	A
$E_{AS}$	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{mH}$	-	420	mJ
$R_{\theta JA}^{**}$	Thermal Resistance- Junction to Ambient		-	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}^{**}$	Thermal Resistance- Junction to Case		-	0.5	

Notes :

- \* Pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$
- \*\* Mounted on Large Heat Sink
- \*\*\* limited by bonding wire

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
<b>LN030N040K</b>	<b>T0263</b>			<b>800</b>	

Note: COMTECH defines " Green " as lead-free ( RoHS compliant ) and halogen free ( Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C )

## 6. Electrical Characteristics (TA=25 ° Unless Otherwise Noted)

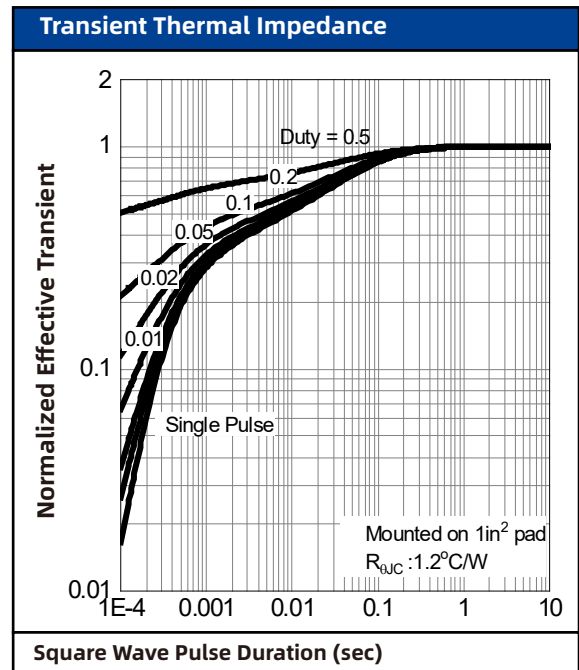
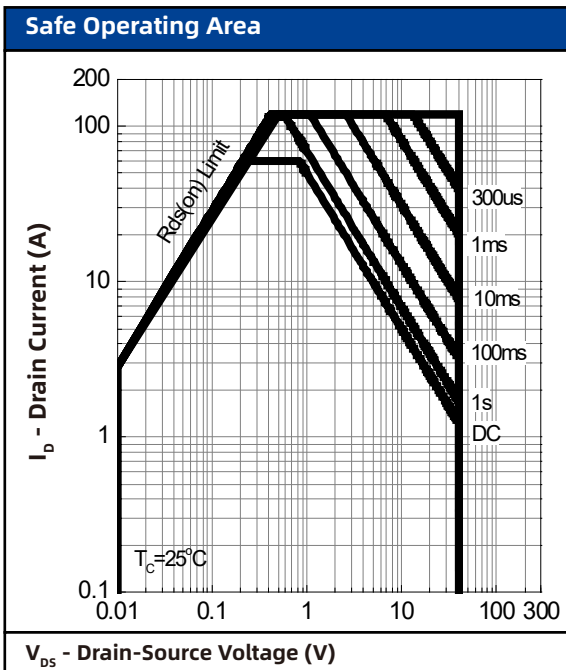
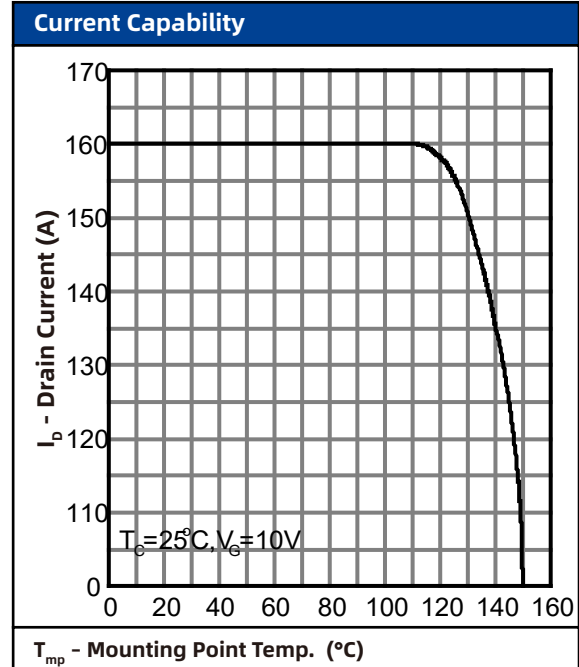
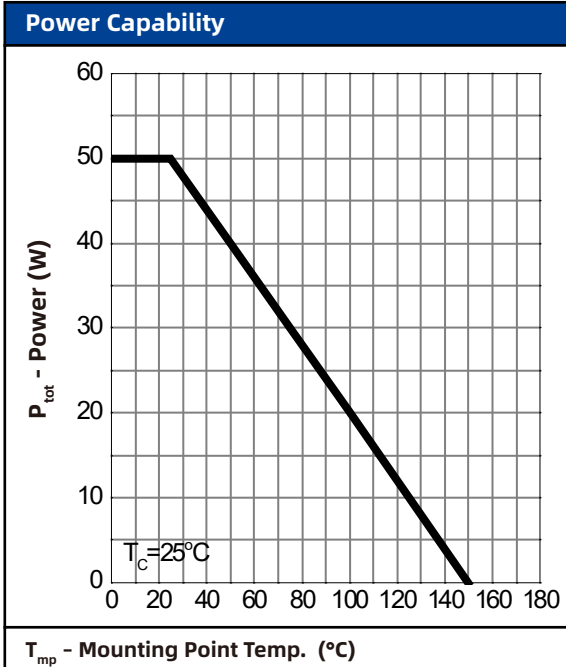
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	40	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	1	-	3	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA
$R_{DS(on)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 30\text{ A}$	-	3	3.3	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_{DS} = 20\text{ A}$	-	5.2	6.0	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 30\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{DS} = 30\text{ A}, V_{GS} = 0\text{ V}$	-	14.5	-	nS
$Q_{rr}$	Reverse Recovery Charge	$dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	5.3	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{ V}$ Frequency = 1 MHz	-	6279	-	pF
$C_{OSS}$	Output Capacitance		-	381	-	
$C_{rSS}$	Reverse Transfer Capacitance		-	253	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.66\ \Omega,$ $I_{DS} = 30\text{ A}$	-	14.2	-	nS
$t_r$	Turn-on Rise Time		-	87.7	-	
$t_d(off)$	Turn-off Delay Time		-	90.6	-	
$t_f$	Turn-off Fall Time		-	84.2	-	
<b>Gate Charge Characteristics<sup>b</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 30\text{ A}$	-	99.5	-	nC
$Q_{gs}$	Gate-Source Charge		-	26.7	-	
$Q_{gd}$	Gate-Drain Charge		-	14.9	-	

Notes :

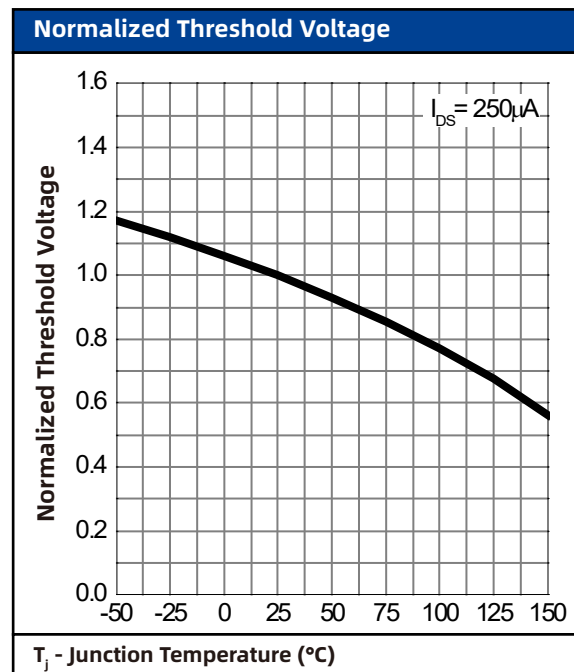
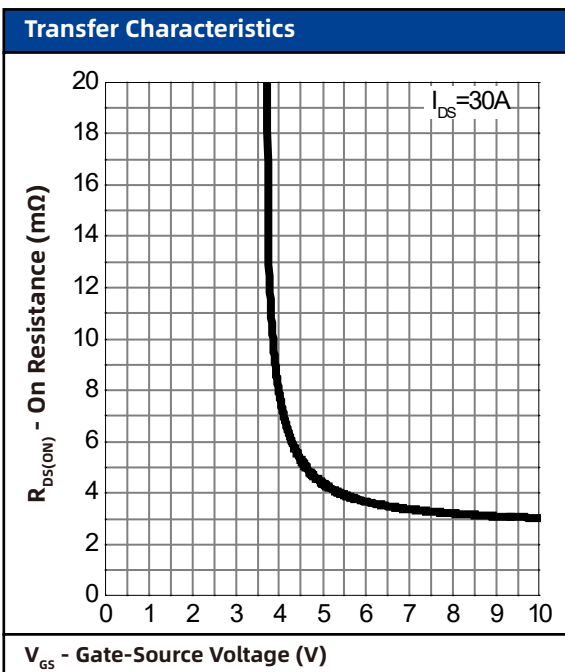
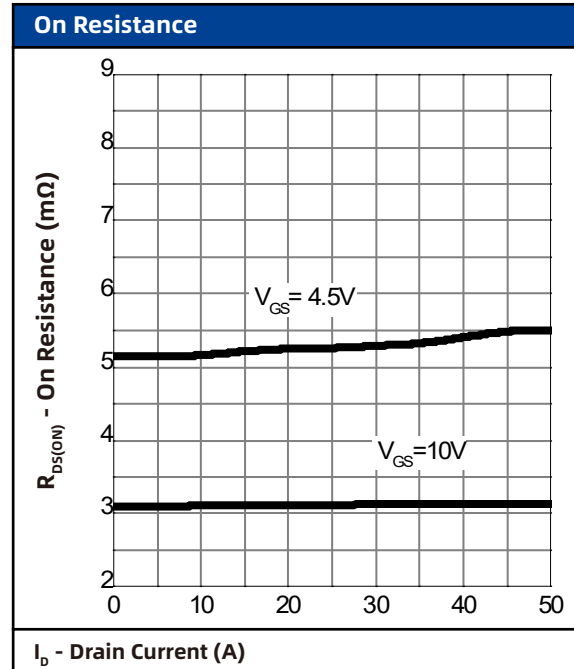
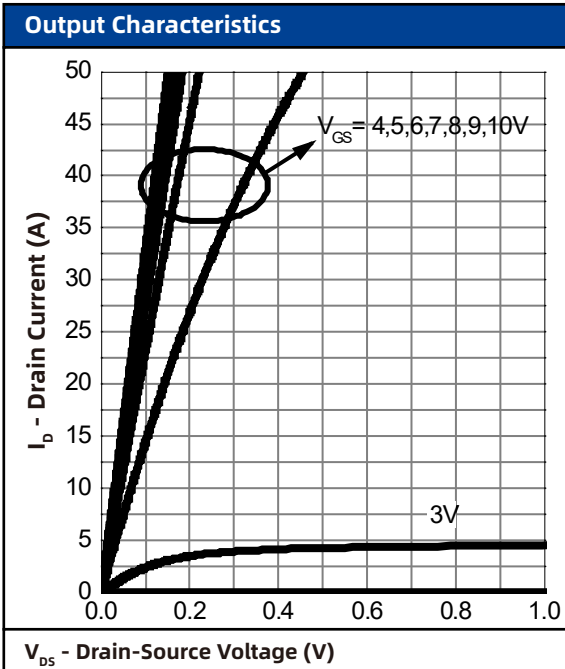
a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

b : Guaranteed by design, not subject to production testing

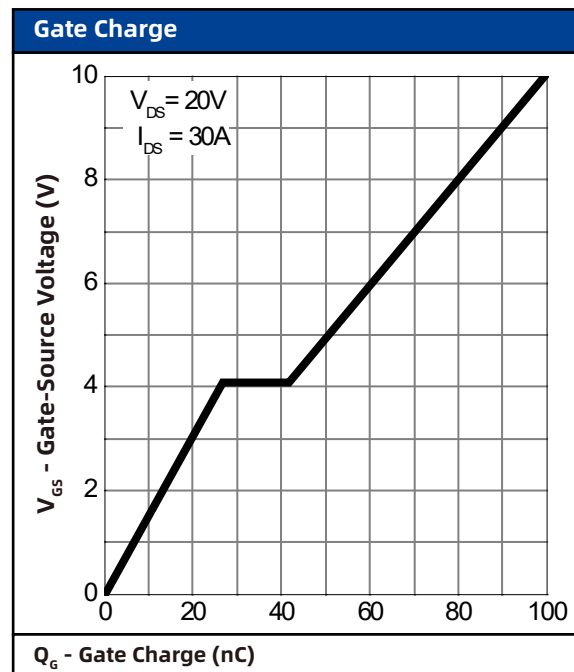
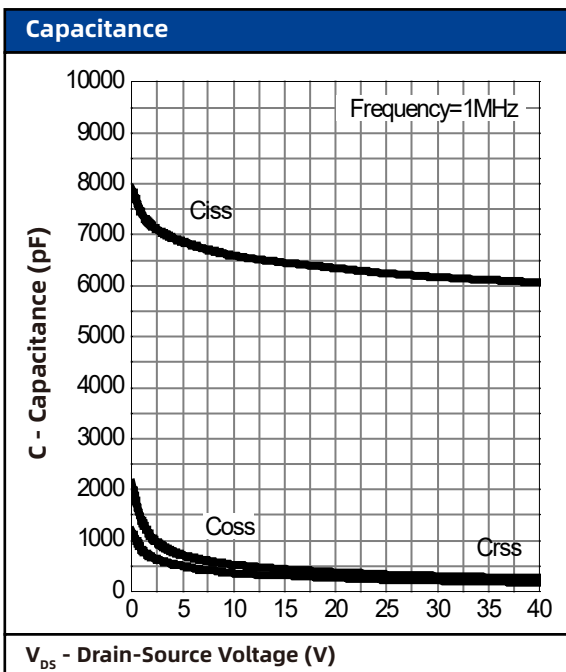
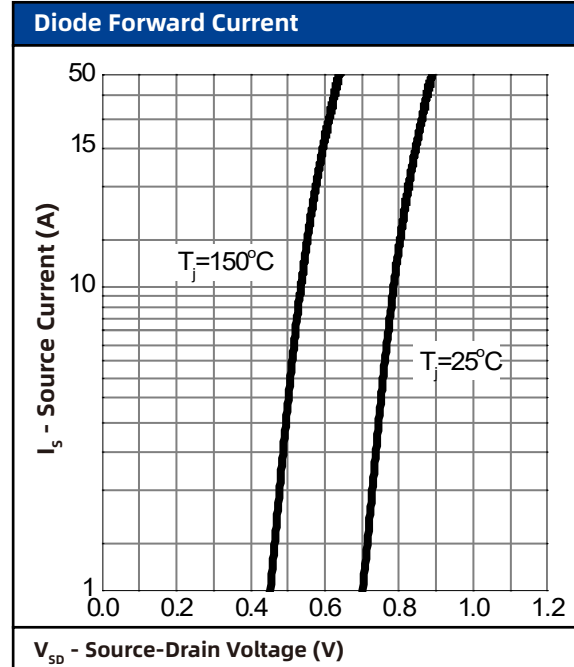
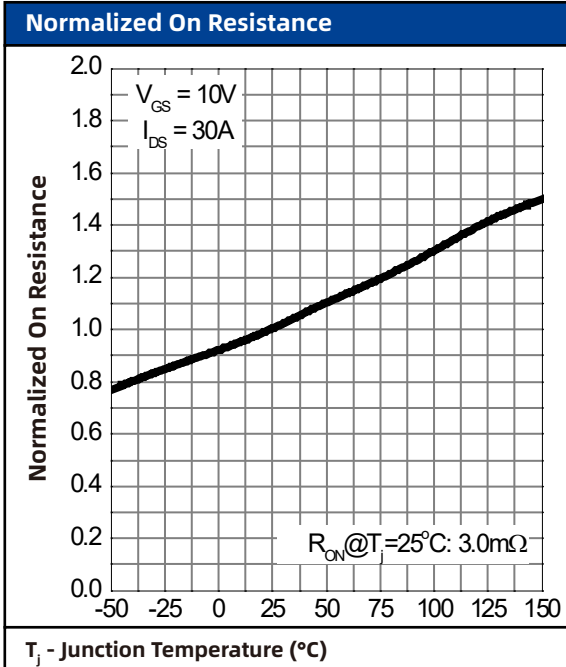
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

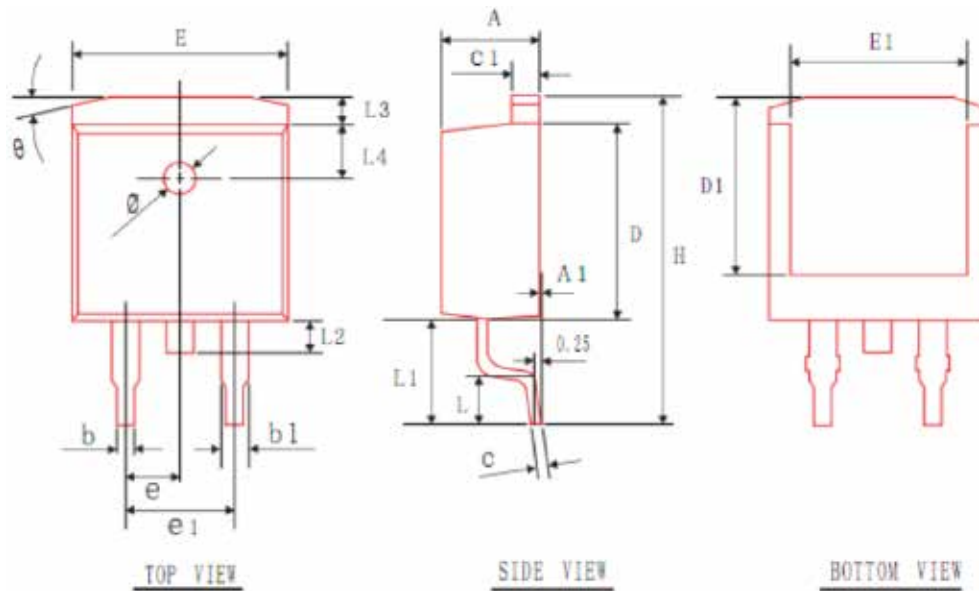


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

TO-263



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.30	4.70
A1	0.00	0.25
b	0.70	0.90
b1	1.20	1.40
c	0.40	0.55
c1	1.25	1.35
D	9.00	9.20
D1	8.00	8.20
H	14.90	15.20
E	9.80	10.20
E1	7.85	8.15
e1	4.93	5.23
L	2.00	2.45
L1	4.60	5.00
L2	1.30	1.70
L3	1.15	1.35
L4	2.40	2.60
$\phi$	1.50 REF	
e	2.54 BSC	
$\theta$	13°TYP	