

1.Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	4mΩ@10V	80A
	7mΩ@4.5V	

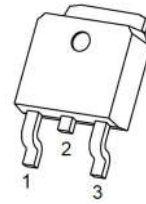
2.Features

- V_{DS} 30V
- I_D 80A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <6 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <10 mohm
- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

3.Applications

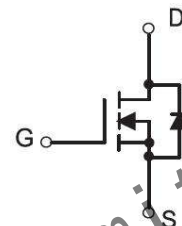
- Power switching application

TO-252

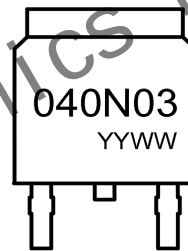


PIN1:GATE
PIN2:DRAIN
PIN3:SOURCE

Schematic diagram



Marking



040N03 : Device Code
YY : Year Code
WW : Week Code

4.Absolute Maximum rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current ¹	I_{DM}	320	A
Single Pulsed Avalanche Energy ²	E_{AS}	104	mJ
Power Dissipation	P_D	38	W
$T_C = 25^\circ\text{C}$			
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.3	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

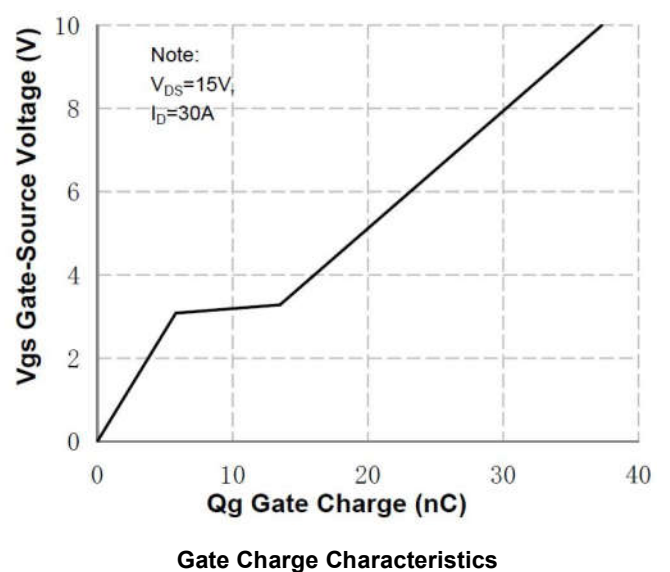
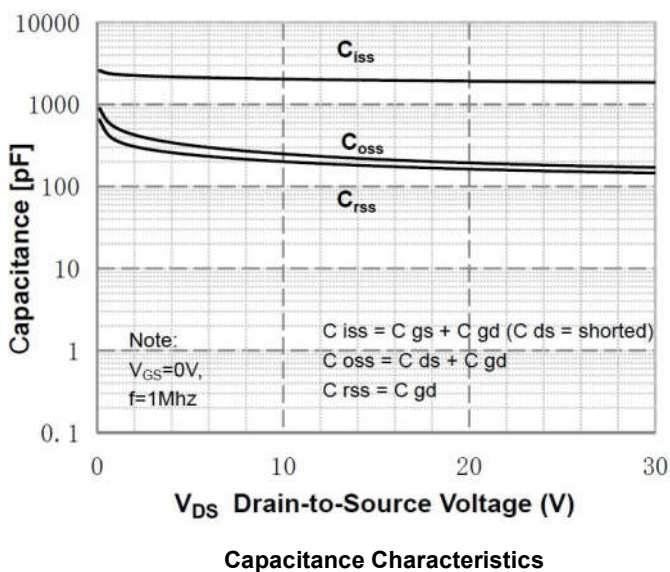
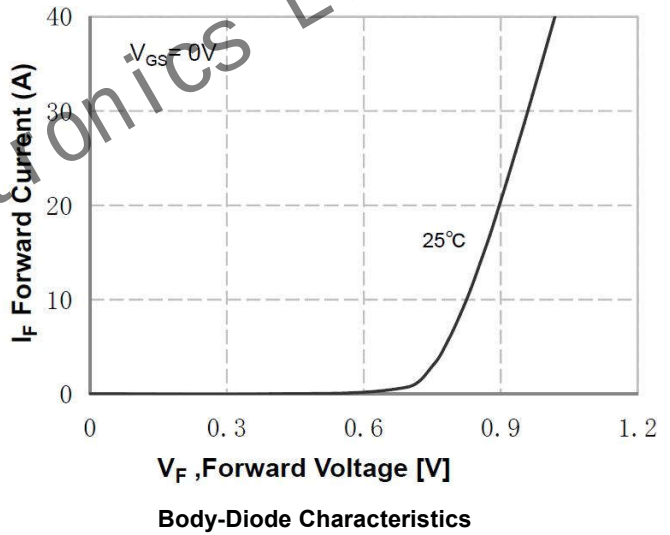
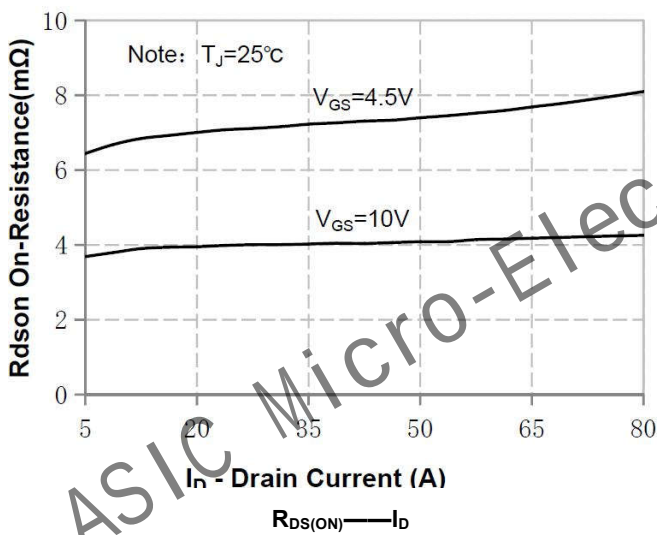
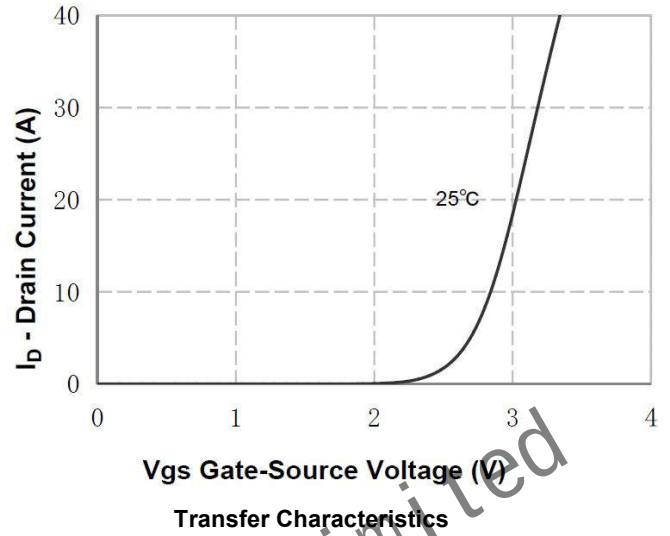
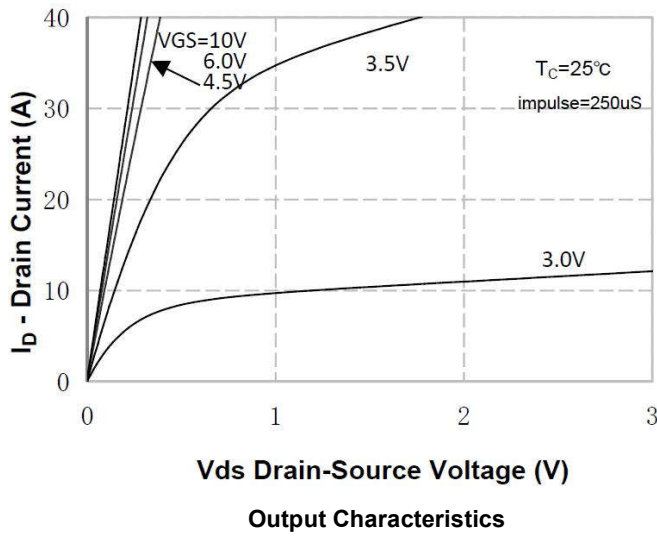
5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

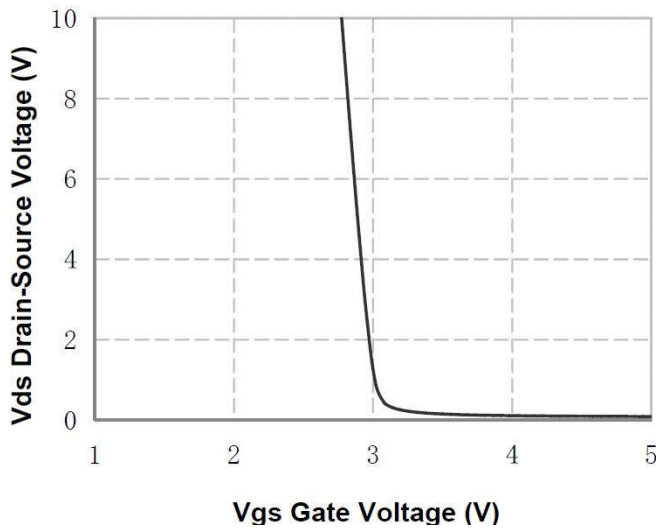
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		4	6	m Ω
		$V_{GS} = 4.5V, I_D = 20A$		7	10	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.0\text{ MHz}$		1970		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			178		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 15V, I_D = 30A, V_{GS} = 10V$		37.3		nC
Gate-source Charge	Q_{gs}			5.8		
Gate-drain Charge	Q_{gd}			7.7		
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 15V,$ $R_G = 2.7\Omega, I_D = 30A$		20		ns
Turn-on Rise Time	t_r			15		
Turn-off Delay Time	$t_{d(off)}$			60		
Turn-off Fall Time	t_f			10		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 30A$			1.2	V

Notes:

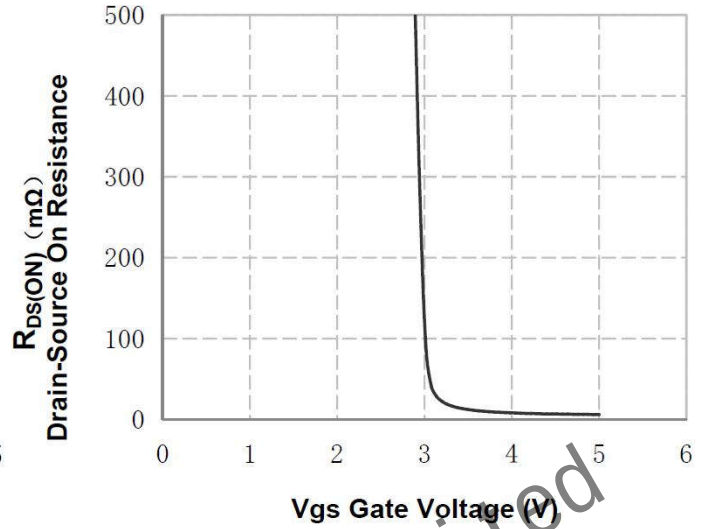
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = 15V$, $V_G = 10V$, $R_G = 25\Omega$, $L = 0.5\text{mH}$,

6. Typical Characteristic

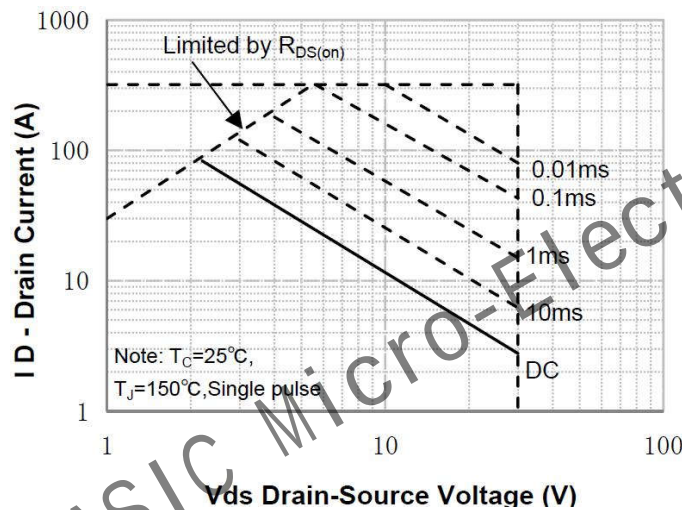




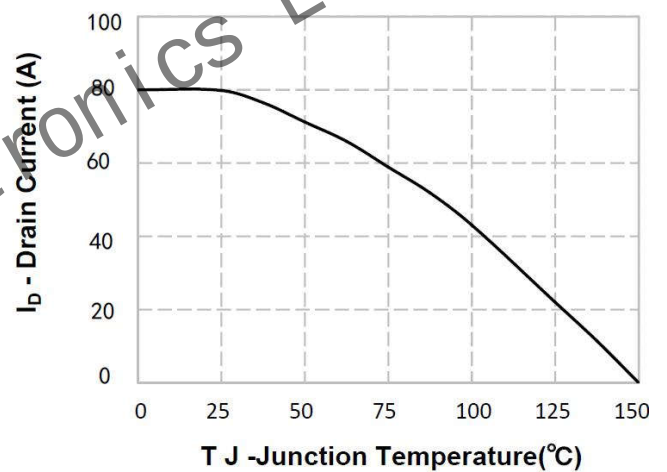
Vds Drain-Source Voltage vs Gate Voltage



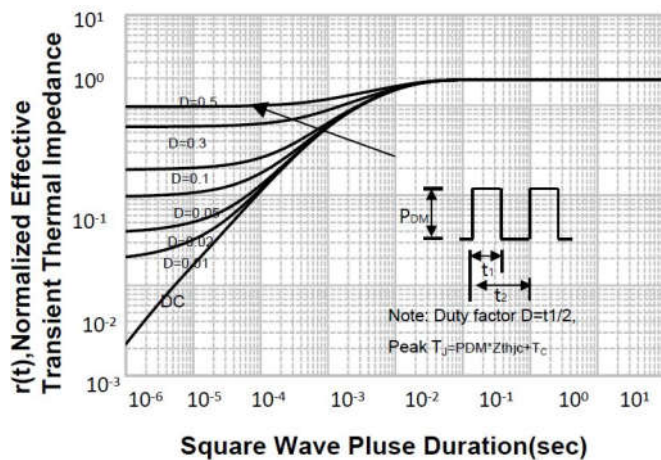
On-Resistance vs Gate Voltage



Maximum Safe Operating Area

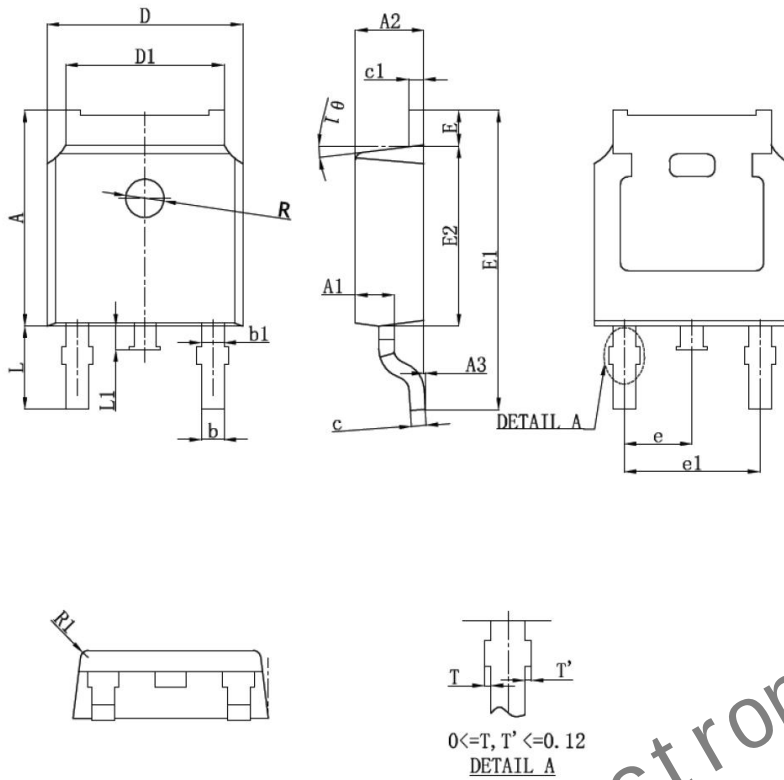


Current De-rating



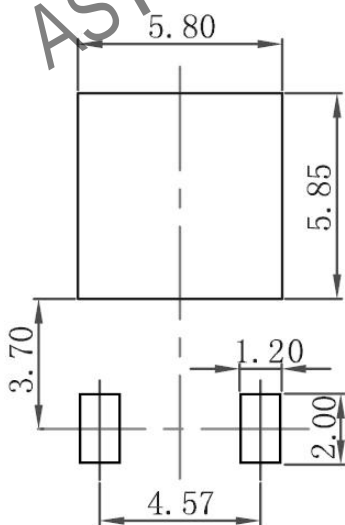
Transient Thermal Response Curve

7.Dimension



Symbol	Millimeters		
	Min	Nom	Max
A	7.050	7.100	7.150
A1	0.960	1.010	1.060
A2	2.250	2.300	2.350
A3	0.000	0.050	0.100
b	0.760REF.		
b1	1.000REF.		
C	0.508REF.		
c1	0.508REF.		
D	6.550	6.600	6.650
D1	5.220	5.320	5.420
E	0.950	1.000	1.050
E1	9.700	9.900	10.100
E2	6.050	6.100	6.150
e	2.286BSC		
e1	4.572REF.		
L	2.650	2.800	2.950
L1	0.700	0.800	0.900
θ1	7°REF.		
R	0.250REF.		

8.Recommended Land Pattern

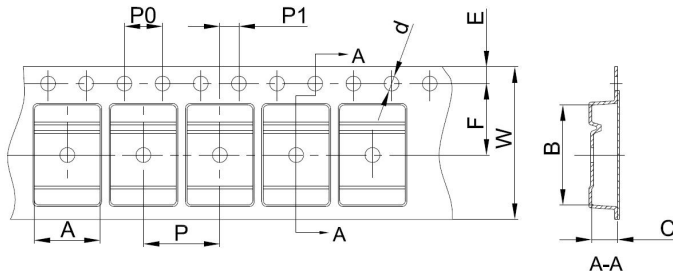


Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm

9. Tape and Reel

TO-252-2L Embossed Carrier Tape

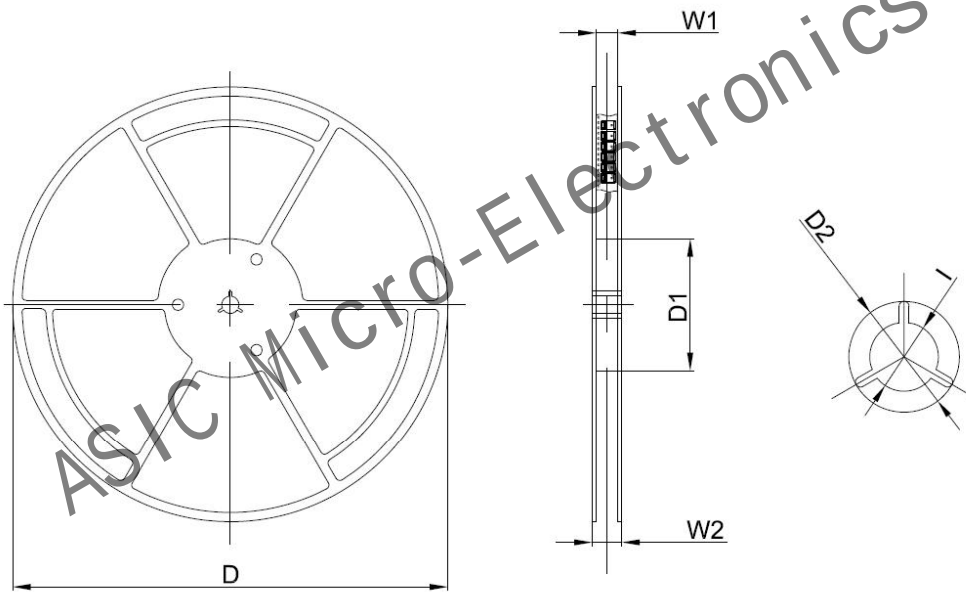


Packaging Description:

TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

TO-252-2L Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13"Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	

DISCLAIMER

ASIC PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with ASIC products. You are solely responsible for

- (1) selecting the appropriate ASIC products for your application,
- (2) designing, validating and testing your application
- (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. ASIC grants you permission to use these resources only for development of an application that uses the ASIC products described in the resource. Other reproduction and display of these resources are prohibited. No license is granted to any other ASIC intellectual property right or to any third party intellectual property right. ASIC disclaims responsibility for, and you will fully indemnify ASIC and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources. ASIC's products are provided subject to ASIC's Terms of Sale or other applicable terms available either on www.asicm.co or provided in conjunction with such ASIC products. ASIC's provision of these resources does not expand or otherwise alter ASIC's applicable warranties or warranty disclaimers for ASIC products

ASIC Micro-Electronics Limited