SGMGQ03340
40V, TQFN Package, GaN E-Mode Power Transistor

FEATURES

- **GaN-on-Silicon E-Mode HEMT Technology**
- **Very Low Gate Charge**
- **Ultra-Low On-Resistance**
- **Very Small Footprint**
- **RoHS Compliant and Halogen Free**

APPLICATIONS

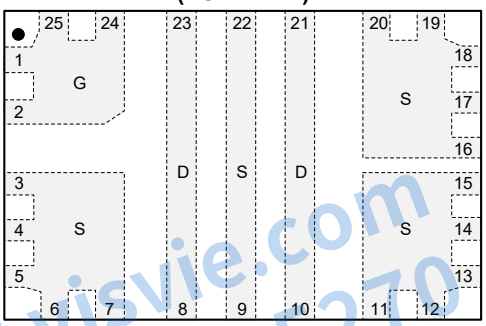
High Frequency DC/DC Converter
Point of Load
RF Envelope Tracking
PC Charger
Mobile Power Bank
Motor Driver

PRODUCT SUMMARY

R_{DSON} (TYP) V_{GS} = 5V	R_{DSON} (MAX) V_{GS} = 5V	I_D (MAX) T_C = +25℃
3mΩ	4.3mΩ	24A

PIN CONFIGURATION

(TOP VIEW)



TQFN-4×3-25L

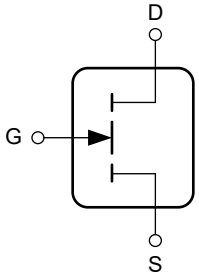
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNITS
Drain-to-Source Voltage	V_{DS}	40	V
Gate-to-Source Voltage	V_{GS}	6 -4	V
Drain Current	I_D	24	A
Drain Current (Pulse) (1)	I_{DM}	160	A
Total Dissipation	P_D	43	W
Junction Temperature	T_J	-40 to +150	℃
Storage Temperature Range	T_{STG}	-40 to +150	℃
Lead Temperature (Soldering, 10s)		+260	℃

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

NOTE: 1. t_{PULSE} = 300μs.

EQUIVALENT CIRCUIT

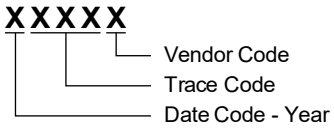


PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMGQ03340	TQFN-4×3-25L	-40℃ to +150℃	SGMGQ03340TTXC25G/TR	SGM 2TLTXC XXXXX	Tape and Reel, 2500

MARKING INFORMATION

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

THERMAL RESISTANCE

PARAMETER	SYMBOL	TYP	UNITS
Junction-to-Ambient Thermal Resistance (1)	$R_{\theta JA}$	45.9	℃/W
Junction-to-Case Thermal Resistance	$R_{\theta JC\_TOP}$	26.2	℃/W
	$R_{\theta JC\_BOTTOM}$	2.9	

NOTE: 1. $R_{\theta JA}$ is determined with the device mounted on one square inch of copper pad, single layer 2oz copper on FR4 board.

ELECTRICAL CHARACTERISTICS

(T_J = +25℃, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Static Characteristics						
Drain-to-Source Breakdown Voltage	V_{BR_DSS}	V_{GS} = 0V, I_D = 500μA	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0V, V_{DS} = 32V			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS} = 5V		3	80	μA
		V_{GS} = 5V, T_J = +125℃		50	500	
		V_{GS} = -4V		1	20	
Gate-to-Source Threshold Voltage	V_{GS_TH}	V_{GS} = V_{DS}, I_D = 7mA	0.7		2.4	V
Drain-to-Source On-State Resistance	R_{DSON}	V_{GS} = 5V, I_D = 15A		3	4.3	mΩ
Gate Resistance	R_G	f = 1MHz		1.7		Ω
Source-to-Drain Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = 0.5A		1.9		V
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{GS} = 0V, V_{DS} = 20V		810		pF
Output Capacitance	C_{OSS}			431		
Reverse Transfer Capacitance	C_{RSS}			13		
Effective Output Capacitance, Energy Related	C_{O_ER}	V_{GS} = 5V, V_{DS} = 20V, I_D = 15A		600		pF
Effective Output Capacitance, Time Related	C_{O_TR}			703		
Total Gate Charge	Q_G	V_{GS} = 5V, V_{DS} = 20V, I_D = 15A		6.3	8.5	nC
Gate-to-Source Charge	Q_{GS}	V_{DS} = 20V, I_D = 15A		1.4		
Gate-to-Drain Charge	Q_{GD}			0.8		
Gate Charge at Threshold	Q_{G_TH}			0.9		
Output Charge	Q_{OSS}	V_{GS} = 0V, V_{DS} = 0V to 20V		14		

TYPICAL PERFORMANCE CHARACTERISTICS

Figure 1 Typical Output Characteristics (T_J = 25 °C)

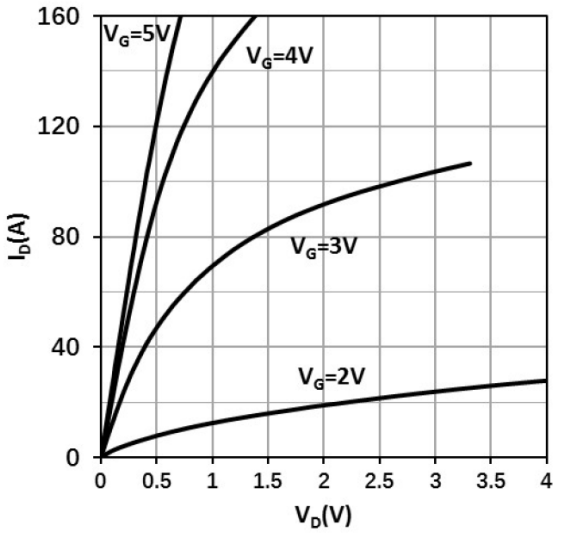


Figure 2 Typical Output Characteristics (T_J = 125 °C)

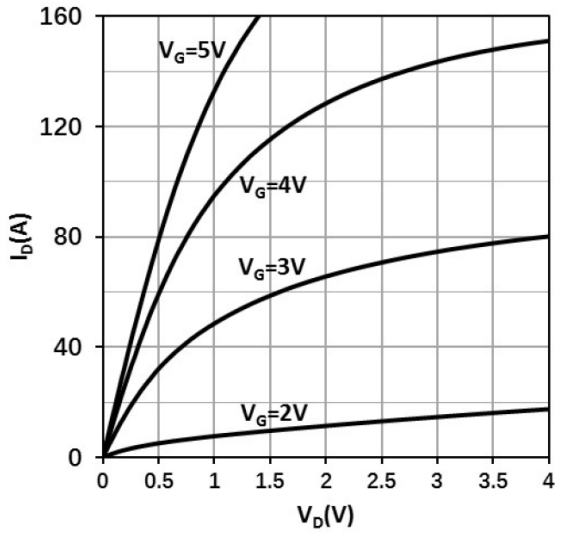


Figure 3 Typ. Drain On-state Resistance(T_J = 25 °C)

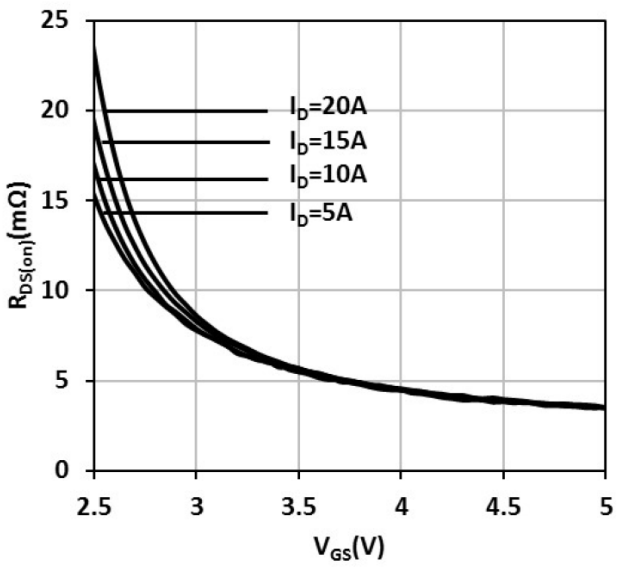
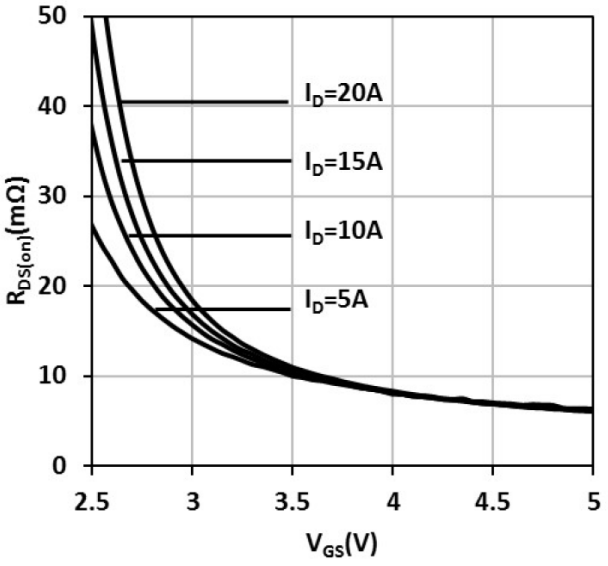


Figure 4 Typ. Drain On-state Resistance (T_J = 125 °C)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

Figure 5 Typical On Resistance vs. Temperature

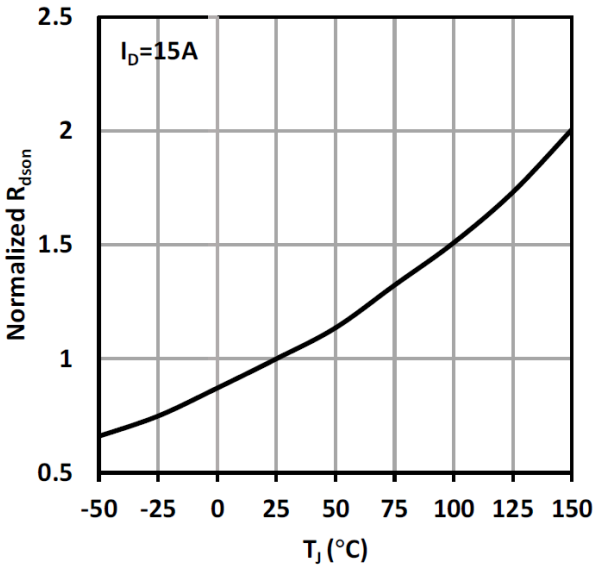


Figure 6 Typical Transfer Characteristics

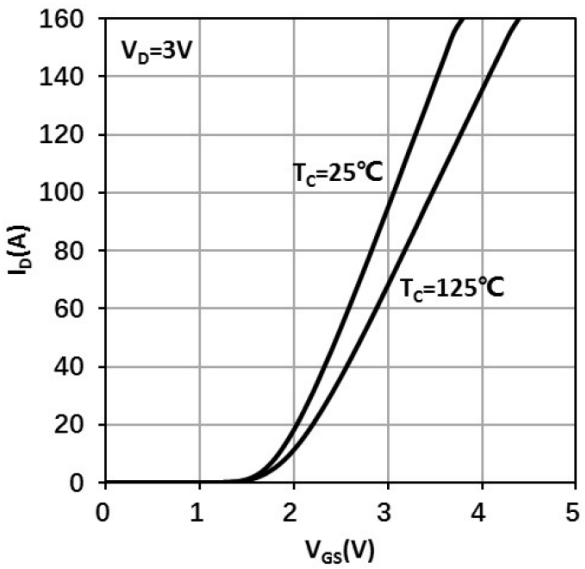


Figure 7 Typ. Reverse Drain-Source Characteristics (V_{GS}≤0, T_J = 25 °C)

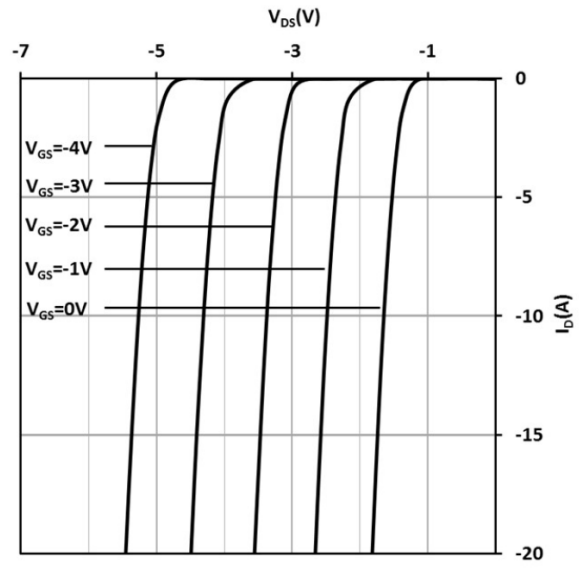
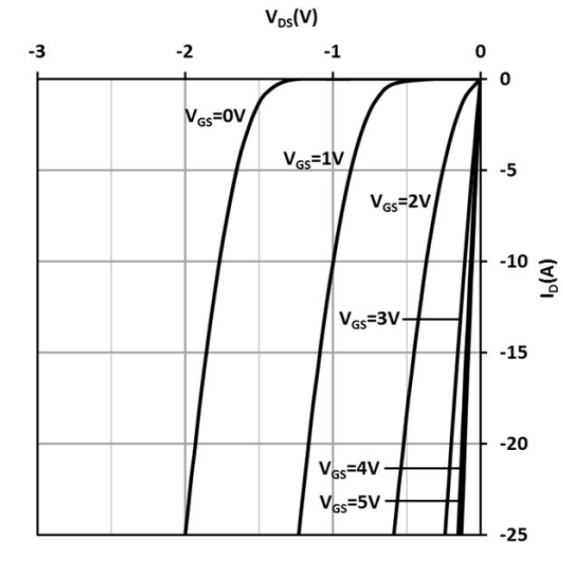


Figure 8 Typ. Reverse Drain-Source Characteristics (V_{GS}≥0, T_J = 25 °C)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

Figure 9 Typ. Reverse Drain-Source Characteristics (V_{GS}≤0, T_J = 125 °C)

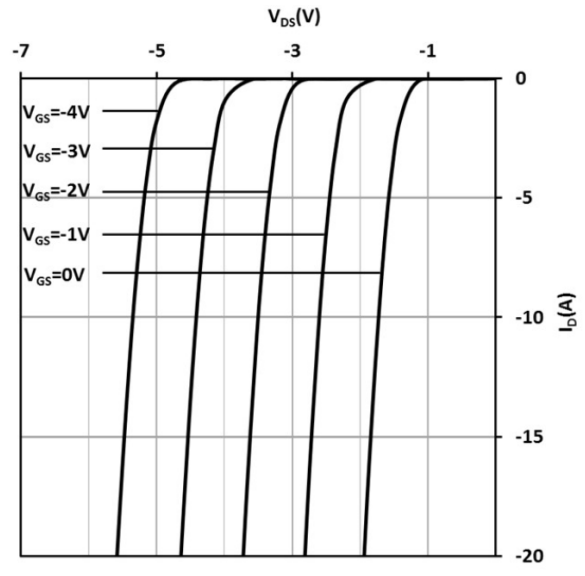


Figure 10 Typ. Reverse Drain-Source Characteristics (V_{GS}≥0, T_J = 125 °C)

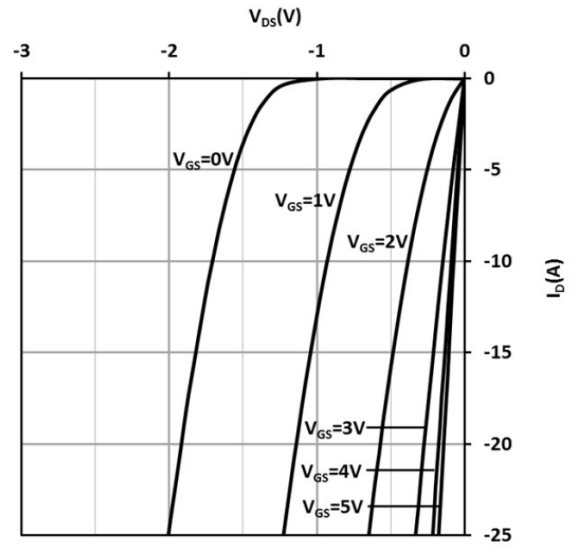


Figure 11 Typ. Capacitances Characteristics

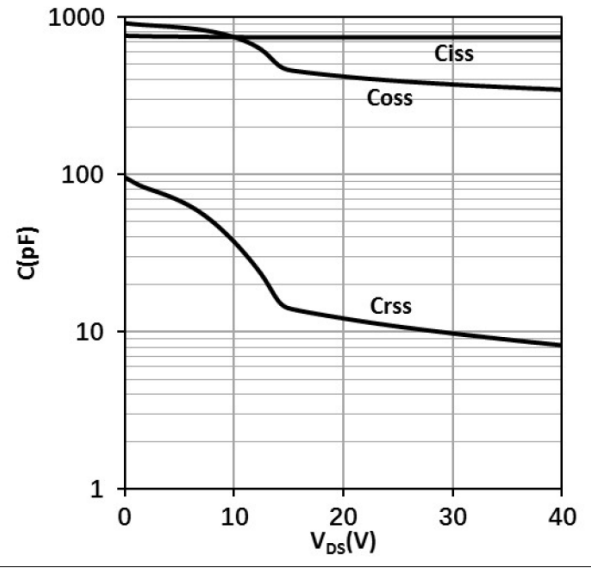
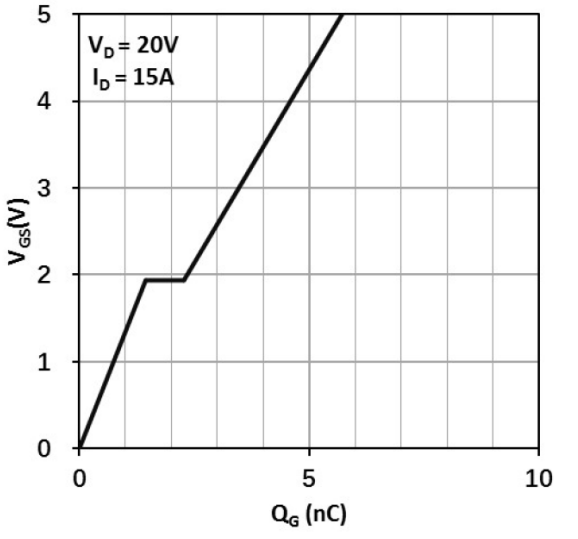


Figure 12 Typ. Gate Charge



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

Figure 13 Normalized Threshold Voltage vs. Temp.

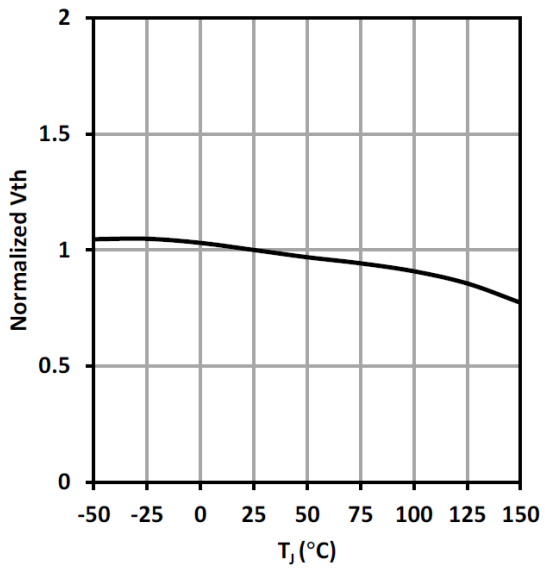


Figure 14 Output Charge

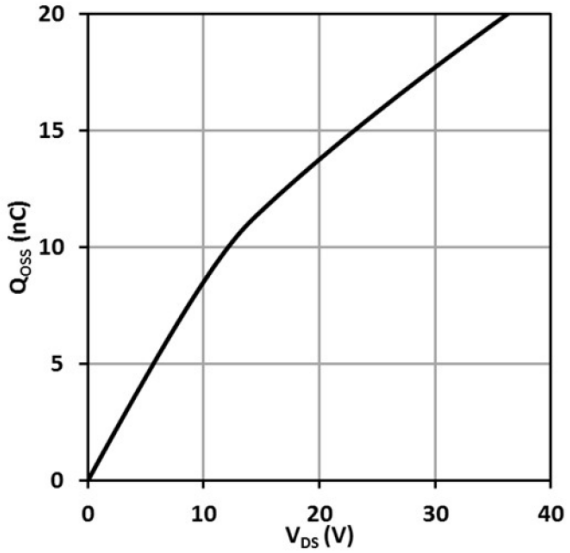


Figure 15 Output Capacitance Stored Energy

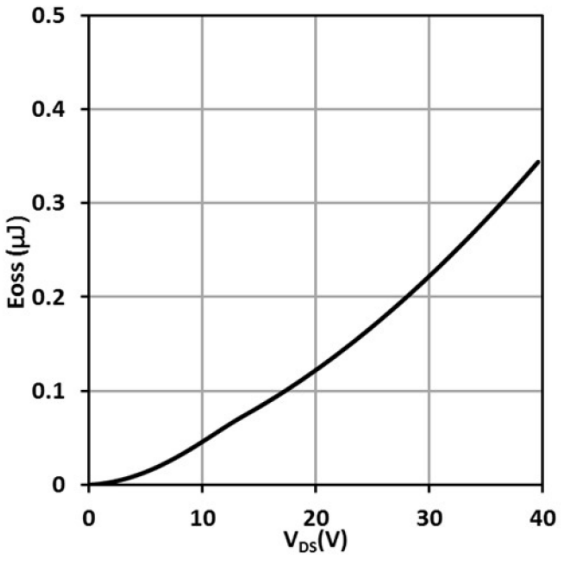
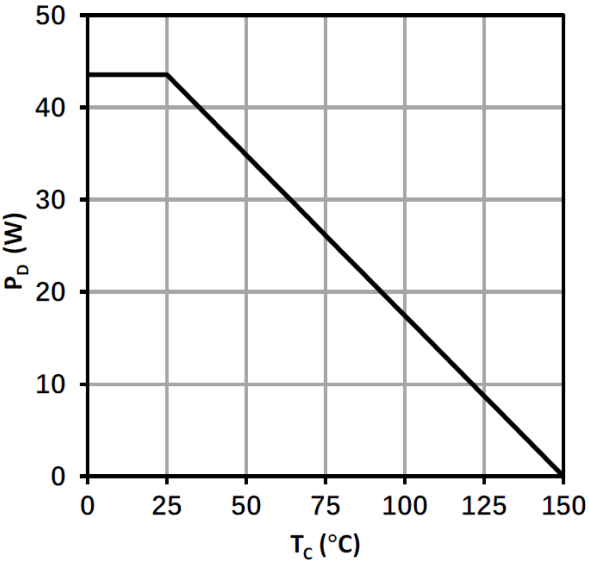


Figure 16 Power Dissipation



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

Figure 17 Safe Operating Area

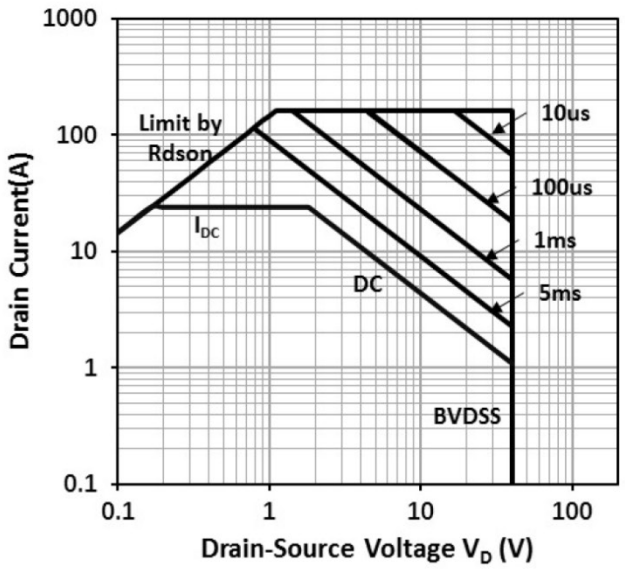
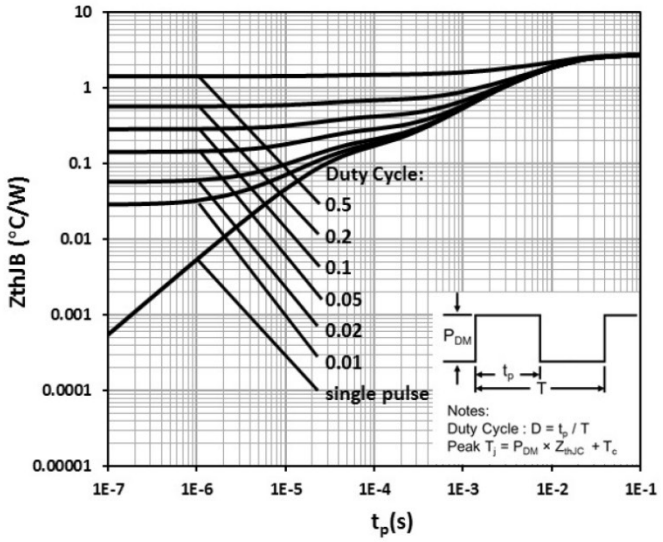


Figure 18 Max. Transient Thermal Impedance



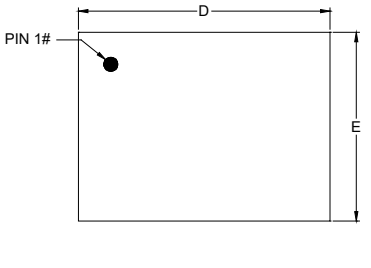
REVISION HISTORY

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

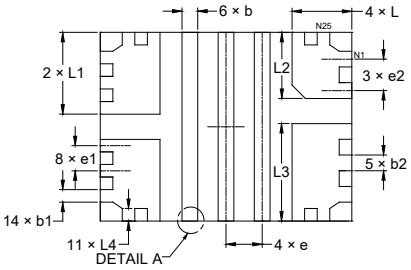
Changes from Original to REV.A (JUNE 2026)	Page
Changed from product preview to production data	All

PACKAGE OUTLINE DIMENSIONS

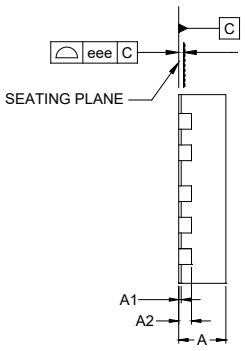
TQFN-4×3-25L



TOP VIEW

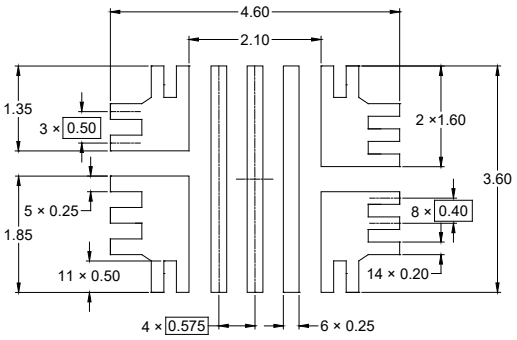


BOTTOM VIEW



SIDE VIEW

DETAIL A



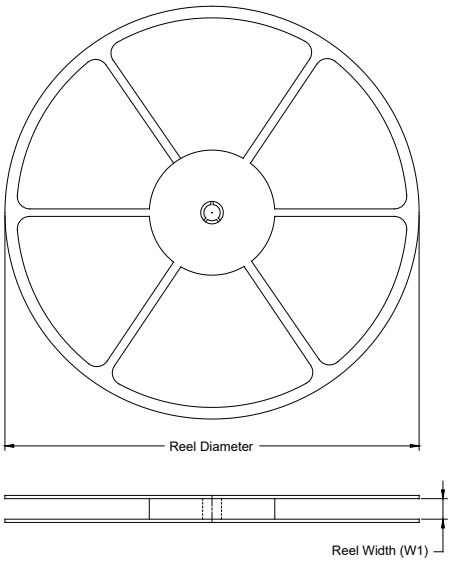
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	-	0.800
A1	0.000	-	0.050
A2		0.203 REF	
b	0.200	-	0.300
b1		0.200 REF	
b2		0.250 REF	
D	3.900	-	4.100
E	2.900	-	3.100
e		0.575 BSC	
e1		0.400 REF	
e2		0.500 REF	
L	0.850	-	1.050
L1	1.200	-	1.400
L2	0.950	-	1.150
L3	1.450	-	1.650
L4		0.200 REF	
eee		0.080	

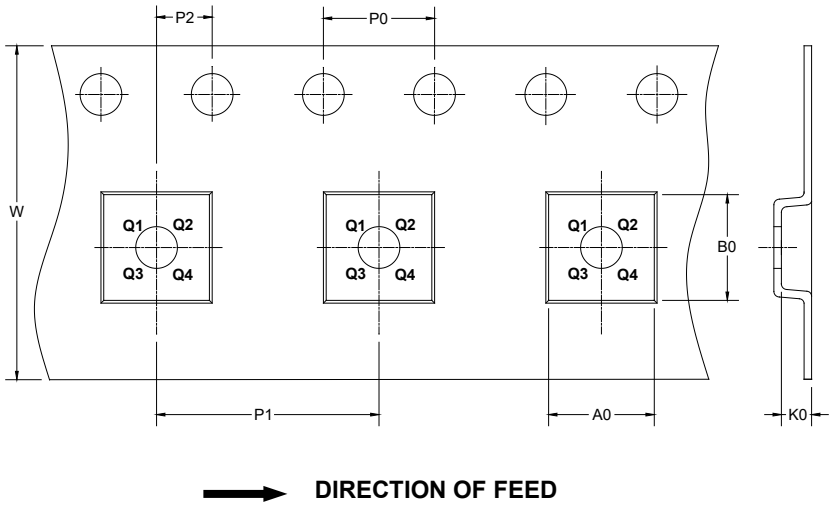
NOTE: This drawing is subject to change without notice.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



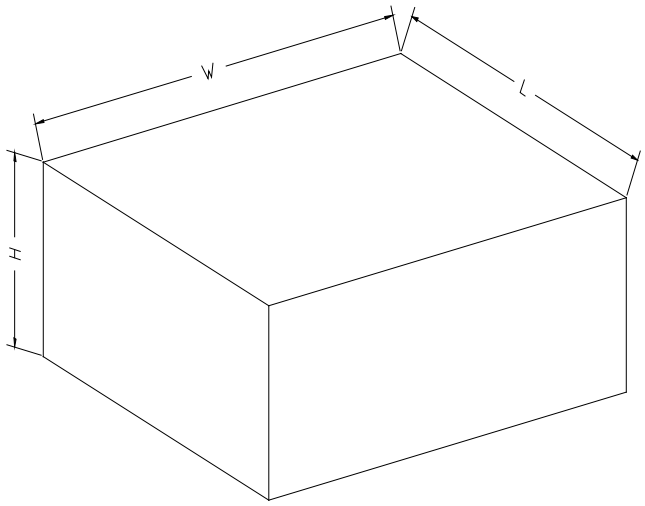
NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TQFN-4×3-25L	13"	12.4	3.30	4.30	1.10	4.0	8.0	2.0	12.0	Q2

DD0001

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13″	386	280	370	5

DD0002