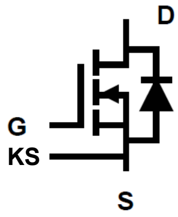
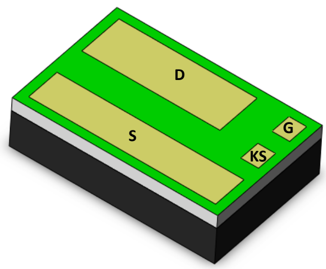
General Description



- Ultra High Switching Frequency
- Ultra Low R_{DS} (on)
- Fast and Controllable Fall and Rise Time
- Zero Reverse Recovery Loss
- Ultrathin and High Reliability LGA Package.
- Kelvin Source



Applications

- Synchronous Rectification
- Class-D Audio
- Envelope Tracking Power Supplies
- High Frequency DC-DC Converter

Package: FCLGA

Size: 1.9 mm x 2.9 mm

Maximum Ratings

Symbol	Parameter	Max	Unit
V_{DS}	Drain-to-Source Voltage (Continuous)	100	V
I_D	Continuous current	16	A
	Pulsed (25 ˚C, T_{PULSE} = 300 µs)	110	A
V_{GS}	Gate-to-Source Forward Voltage	6	V
	Gate-to-Source Reverse Voltage	-4	V
T_J	Operating Temperature	-40 to 150	˚C
T_{STG}	Storage Temperature	-40 to 150	˚C

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

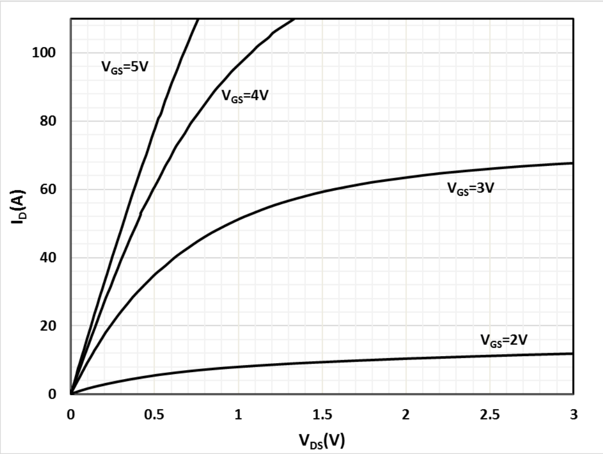
Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
Static Parameters						
BV_{DSS}	Drain-to-Source Voltage	100			V	V_{GS} = 0 V, I_D = 200 µA
I_{DSS}	Drain-Source Leakage		20	120	µA	V_{GS} = 0 V, V_{DS} = 80 V
I_{GSS}	Gate-to-Source Forward Leakage		1	25	µA	V_{GS} = 5 V
	Gate-to-Source Reverse Leakage		10	250	µA	V_{GS} = -4 V
$V_{GS(TH)}$	Gate Threshold Voltage	0.8	1.1	2.1	V	V_{DS} = V_{GS}, I_D = 5 mA
$R_{DS(on)}$	Drain-Source On Resistance		6	7	mΩ	V_{GS} = 5 V, I_D = 16 A
V_{SD}	Source-Drain Forward Voltage		1.45		V	I_S = 0.5 A, V_{GS} = 0 V
Dynamic Parameters						
C_{ISS}	Input Capacitance		660		pF	V_{GS} = 0 V, V_{DS} = 50 V
C_{OSS}	Output Capacitance		238			V_{GS} = 0 V, V_{DS} = 50 V
C_{RSS}	Reverse Transfer Capacitance		2.6			V_{GS} = 0 V, V_{DS} = 50 V
$C_{OSS(ER)}$	Energy Related C_{OSS}		317			V_{GS} = 0 V, V_{DS} = 0 to 50 V
$C_{OSS(TR)}$	Time Related C_{OSS}		443			V_{GS} = 0 V, V_{DS} = 0 to 50 V
Q_G	Total Gate Charge		5.2		nC	V_{GS} = 5 V, V_{DS} = 50 V, I_D = 16 A
Q_{GS}	Gate-to-Source Charge		1.4			V_{DS} = 50 V, I_D = 16 A
Q_{GD}	Gate-to-Drain Charge		0.6			V_{DS} = 50 V, I_D = 16 A
$Q_{G(TH)}$	Gate Charge at Threshold		0.8			V_{DS} = 50 V, I_D = 16 A
Q_{OSS}	Output Charge		22			V_{GS} = 0 V, V_{DS} = 50 V

Thermal Parameters

Symbol	Parameter	Typ	Unit
$R_{\theta JC(top)}$	Thermal Resistance, Junction-to-Case (top)	14.7	˚C/W
$R_{\theta JB}$	Thermal Resistance, Junction-to-Board	7.7	˚C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	48	˚C/W

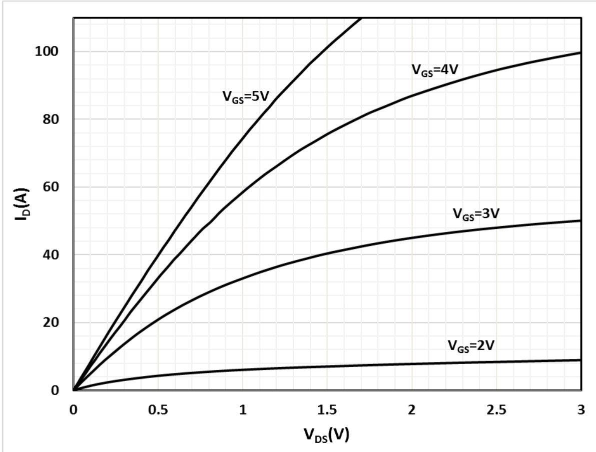
Note 1: $R_{\theta JA}$ is determined with the device mounted on one square inch of copper pad, single layer 2 oz copper on FR4 board.

Fig. 1 Typ. Output Characteristics



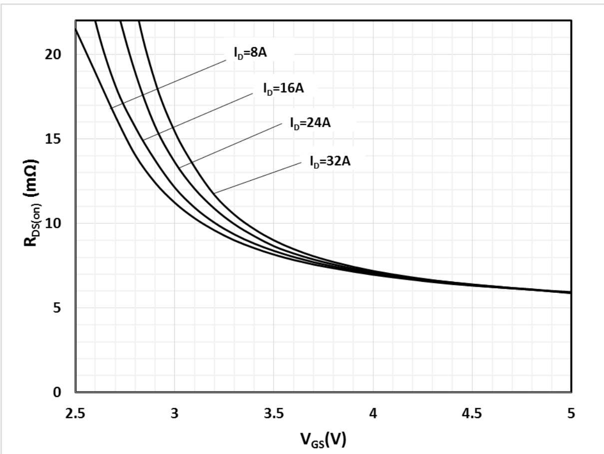
$I_D = f(V_{DS},V_{GS})$; T_J = 25 ˚C

Fig. 2 Typ. Output Characteristics



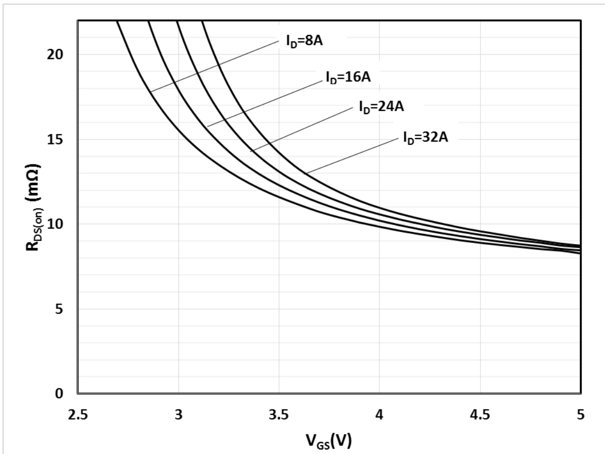
$I_D = f(V_{DS},V_{GS})$; T_J = 125 ˚C

Fig. 3 Typ. Drain-Source On-State Resistance



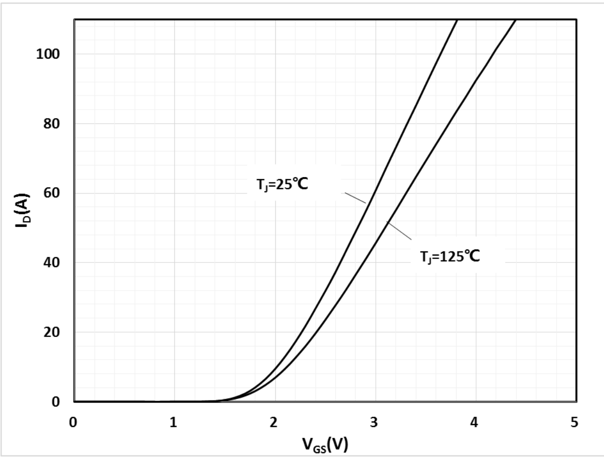
$R_{DS(on)} = f(I_D,V_{GS})$; T_J = 25 ˚C

Fig. 4 Typ. Drain-Source On-State Resistance



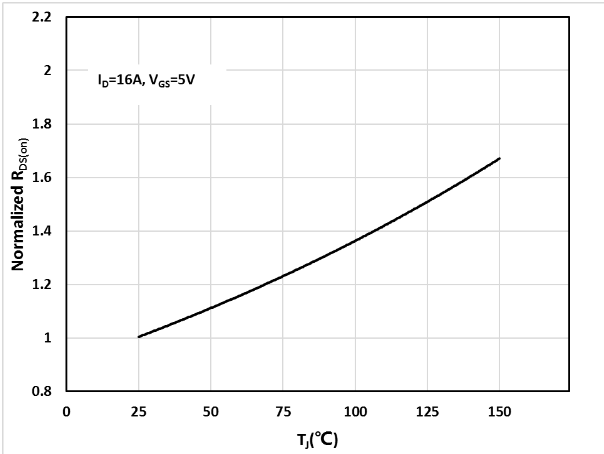
$R_{DS(on)} = f(I_D,V_{GS})$; T_J = 125 ˚C

Fig. 5 Typ. Transfer Characteristics.



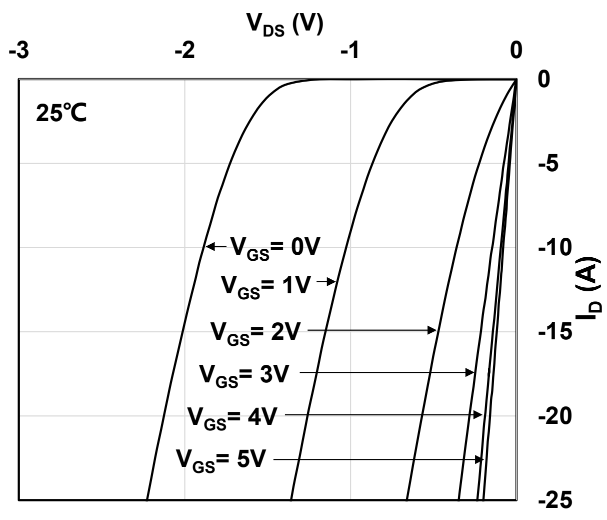
$I_D = f(V_{GS},T_J)$; V_{DS} = 3 V

Fig. 6 Normalized On-State Resistance vs. Temp.



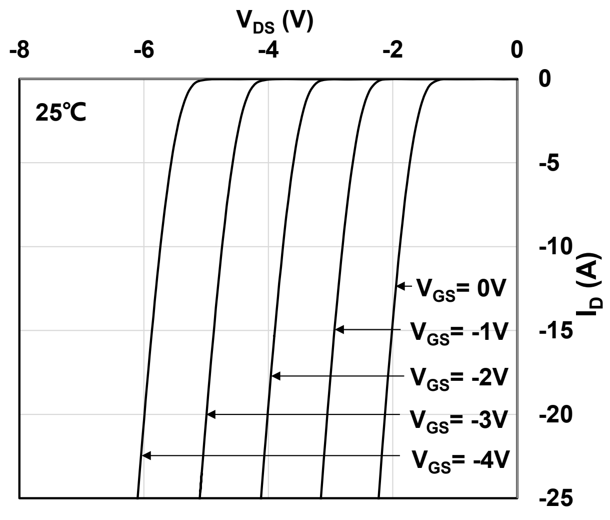
Normalized $R_{DS(on)} = f(T_J)$; I_D = 16 A

Fig. 7 Typ. Reverse Drain-Source Characteristics



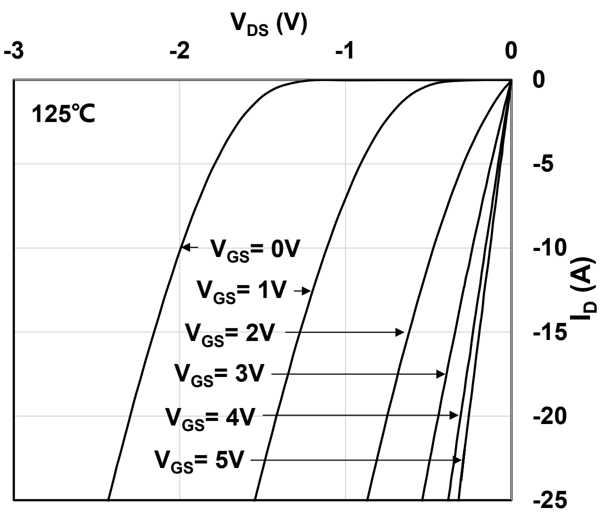
$I_D = f(V_{DS},V_{GS})$; T_J = 25 ˚C

Fig. 8 Typ. Reverse Drain-Source Characteristics



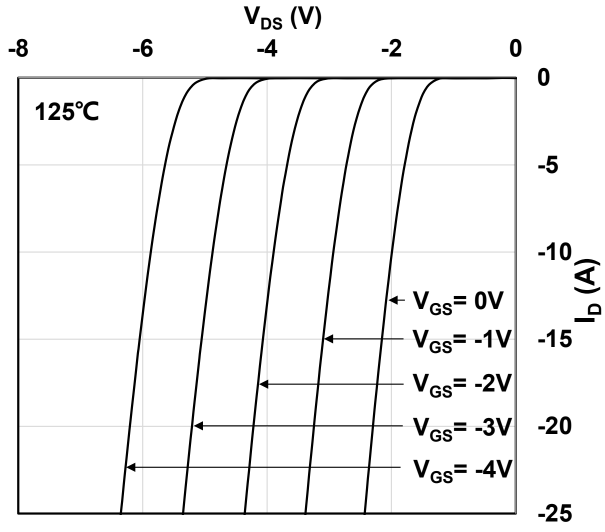
$I_D = f(V_{DS},V_{GS})$; T_J = 25 ˚C

Fig. 9 Typ. Reverse Drain-Source Characteristics



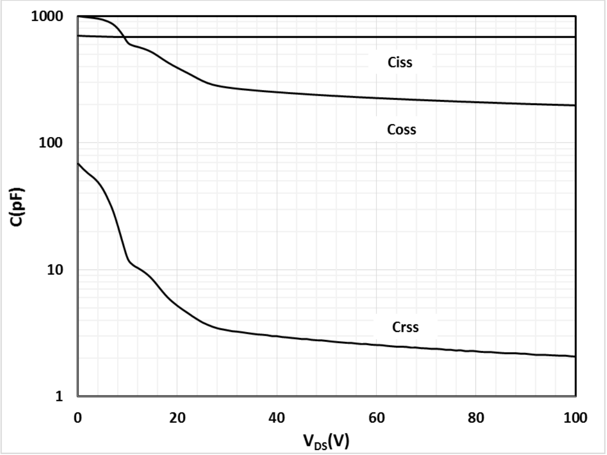
$I_D = f(V_{DS}, V_{GS})$; $T_J = 125$ ˚C

Fig. 10 Typ. Reverse Drain-Source Characteristics



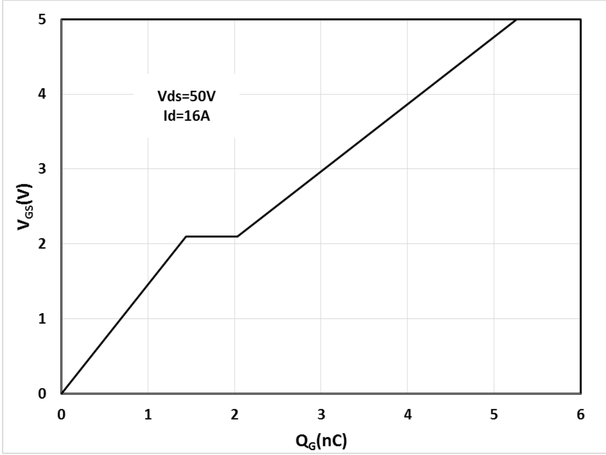
$I_D = f(V_{DS}, V_{GS})$; $T_J = 125$ ˚C

Fig. 11 Typ. Capacitances(Log Scale)



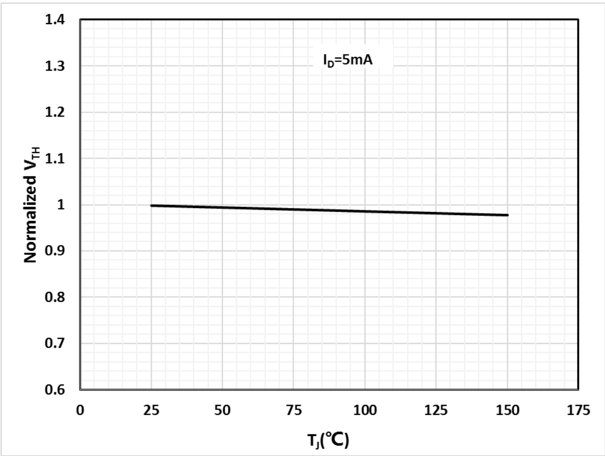
$I_D = f(V_{DS}, V_{GS})$; $T_J = 25$ ˚C

Fig. 12 Typ. Gate Charge



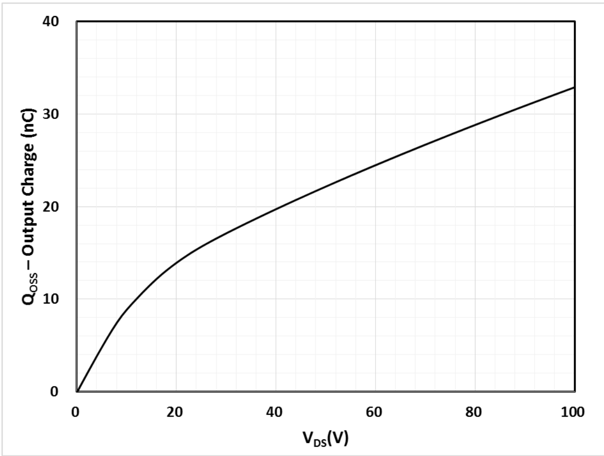
$V_{GS} = f(Q_G)$; $V_{DS} = 50$ V; $I_D = 16$ A

Fig. 13 Normalized Threshold Voltage vs. Temp.



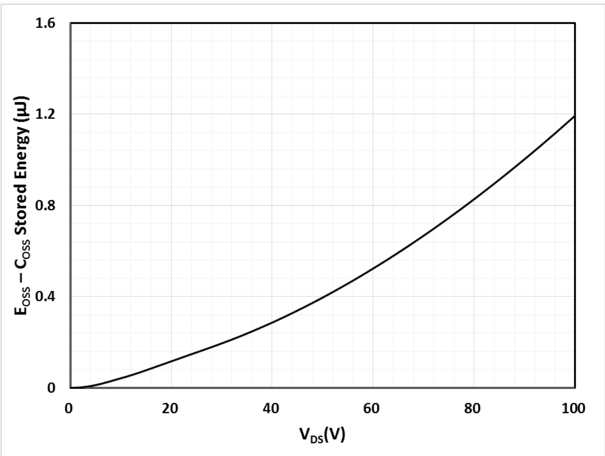
Normalized $V_{TH} = f(T_J)$; $V_{GS} = V_{DS}$; $I_D = 5$ mA

Fig. 14 Output Charge



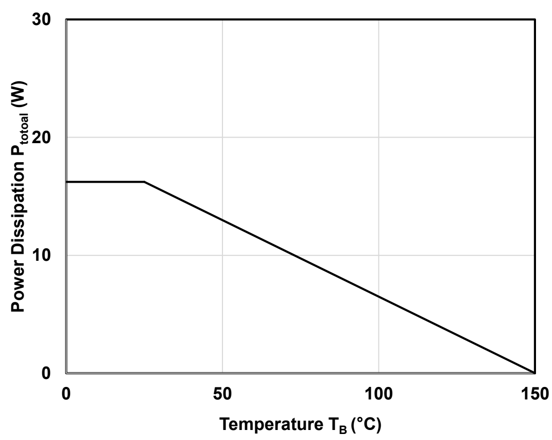
Qoss = f(V_{DS})

Fig. 15 Output Capacitance Stored Energy



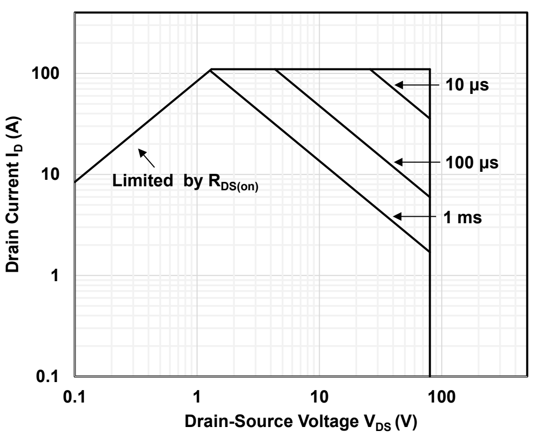
$E_{oss} = f(V_{DS})$

Fig. 16 Power Dissipation



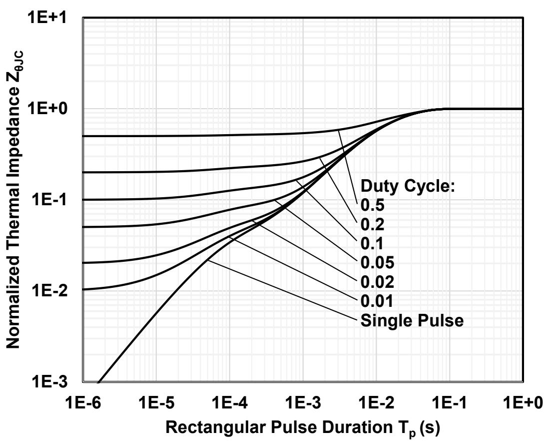
$P_{tot} = f(T_B)$

Fig. 17 Safe Operating Area



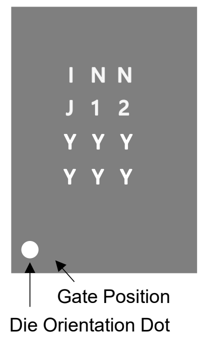
$I_D = f(V_{DS})$; $T_B = 25\ ^\circ C$; Single Pulse

Fig. 18 Max. Transient Thermal Impedance



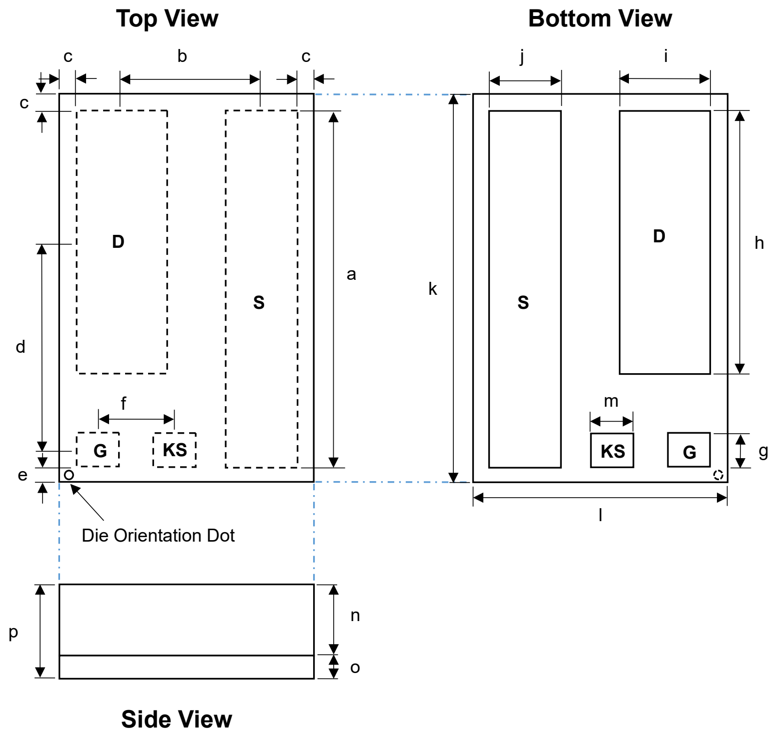
$Z_{\theta JB} = f(t_p)$; parameter: $D = t_p / T$

Marking Reference



Marking Line 1 (INN)	Innoscience
Marking Line 2 (J12)	INN100L12
Marking Line 3 (YYY)	Lot Code
Marking Line 4 (YYY)	

Package Reference *(units in μm)*



DIM	MICROMETERS		
	MIN	NOM	MAX
a	2590	2640	2690
b		1045	
c		130	
d		1550	
e		120	
f		565	
g	200	250	300
h	1900	1950	2000
i	625	675	725
j	465	515	565
k	2800	2900	3000
l	1800	1900	2000
m	260	310	360
n		550	
o	170	200	230
p	690	750	810

Important Notice