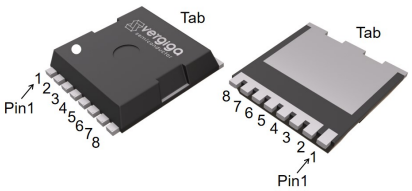
Features

V_{DS}	85	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	1.2	mΩ
$I_{D(Wire\ bond\ limited)}$	325	A

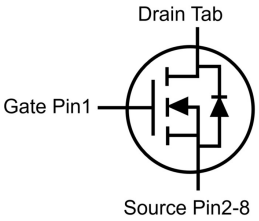
- Enhancement mode
- Low RDS(on) to minimize conduction losses
- VitoMOS® Ⅱ Technology
- 100% Avalanche Tested,100% Rg Tested
- Optimized Qg, Qgd, and Qgd/Qgs ratio to minimize switching losses

TOLL



Pb-Free RoHS HF Halogen-Free

Part ID	Package Type	Marking	Packing
VS8801GKH	TOLL	8801GKH	2000PCS/Reel



Maximum ratings, at T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage		85	V
V_{GS}	Gate-source voltage		±20	V
I_S	Diode continuous forward current (Wire bond limited)	T_C = 25°C	325	A
I_D	Continuous drain current @VGS=10V (Wire bond limited)	T_C = 25°C	325	A
I_D	Continuous drain current @VGS=10V (Silicon limited)	T_C = 100°C	303	A
I_{DM}	Pulse drain current tested ①	T_C = 25°C	1230	A
I_{DSM}	Continuous drain current @VGS=10V	T_A=25°C	33	A
		T_A=70°C	28	A
EAS	Maximum avalanche energy, single pulsed ②		1681	mJ
P_D	Maximum power dissipation ③	T_C = 25°C	577	W
		T_C = 100°C	288	W
P_{DSM}	Maximum power dissipation ④	T_A=25°C	3.5	W
		T_A=70°C	2.4	W
T_J,T_{STG}	Operating junction and storage temperature range		-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Max	Unit
$R_{\theta JC}$	Thermal resistance, junction-to-case ⑤	0.22	0.26	°C/W
$R_{\theta JA}$	Thermal resistance, junction-to-ambient ⑥	36	43	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-source breakdown voltage	V_{GS}=0V, I_D=250μA	85	95	--	V
I_{DSS}	Zero gate voltage drain current(Tj=25℃)	V_{DS}=85V,V_{GS}=0V	--	--	1	μA
	Zero gate voltage drain current(Tj=125℃)⑦	V_{DS}=85V,V_{GS}=0V	--	--	100	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	2.5	3	3.5	V
$R_{DS(on)}$	Drain-source on-state resistance ⑧	V_{GS}=10V, I_D=80A	--	1.2	1.5	mΩ
		(Tj=100℃) ⑦	--	1.8	--	mΩ
G_{FS}	Forward transconductance	V_{DS}=5V, I_D=40A	--	80	--	S
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input capacitance ⑦	V_{DS}=40V,V_{GS}=0V, f=100kHz	--	11370	--	pF
Coss	Output capacitance ⑦		--	2290	--	pF
Crss	Reverse transfer capacitance ⑦		--	85	--	pF
Rg	Gate resistance	f=1MHz	--	2.4	--	Ω
Qg	Total gate charge ⑦	V_{DS}=40V,I_D=80A, V_{GS}=10V	--	175	--	nC
Qgs	Gate-source charge ⑦		--	55	--	nC
Qgd	Gate-drain charge ⑦		--	41	--	nC
Switching Characteristics ⑦						
Td(on)	Turn-on delay time	V_{DD}=40V, I_D=80A, R_G=3Ω, V_{GS}=10V	--	29	--	ns
Tr	Turn-on rise time		--	107	--	ns
Td(off)	Turn-off delay time		--	90	--	ns
Tf	Turn-off fall time		--	60	--	ns
Source- Drain Diode Characteristics@ T_j= 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=80A,V_{GS}=0V	--	0.83	1	V
Trr	Reverse recovery time ⑦	V_{DD}=60V, I_{sd}=80A, V_{GS}=0V di/dt=100A/μs	--	84	--	ns
Qrr	Reverse recovery charge ⑦		--	127	--	nC

NOTE:

① Single pulse; pulse width ≤ 100μs.

② This maximum value is based on starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = 82A, V_{GS} =10V； 100% FT tested at L = 0.5mH, I_{AS} = 56A.

③ The power dissipation Pd is based on Tj(max), using junction-to-case thermal resistance RθJC.

④ The power dissipation Pdsm is based on Tj(max), using junction-to-ambient thermal resistance RθJA.

⑤ Thermal resistance from junction to soldering point (on the exposed drain pad). These tests are performed on a cold plate.

⑥ These tests are performed with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with TA=25°C.

⑦ Guaranteed by design, not subject to production testing.

⑧ Pulse width ≤ 380μs; duty cycle≤ 2%.

Typical Characteristics

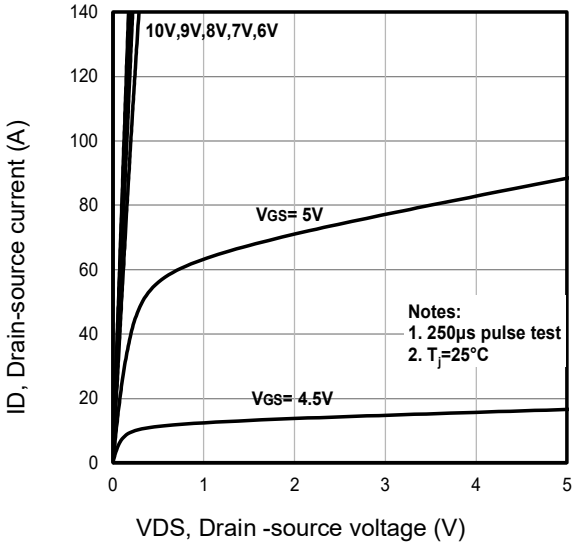


Fig1. Typical output characteristics

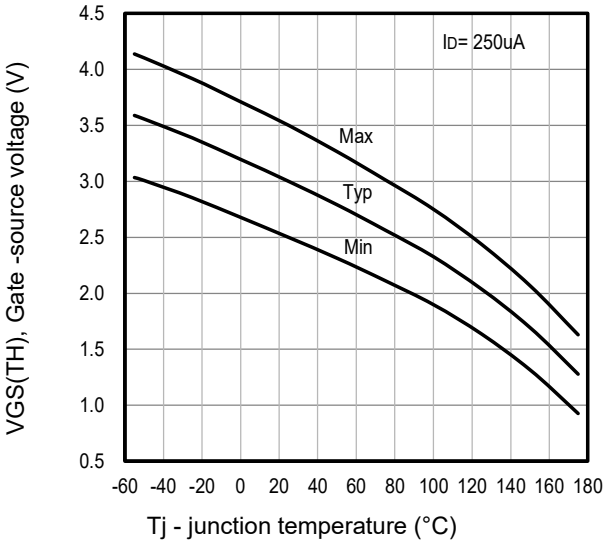


Fig2. Typical $V_{GS(TH)}$ gate -source voltage Vs. Tj

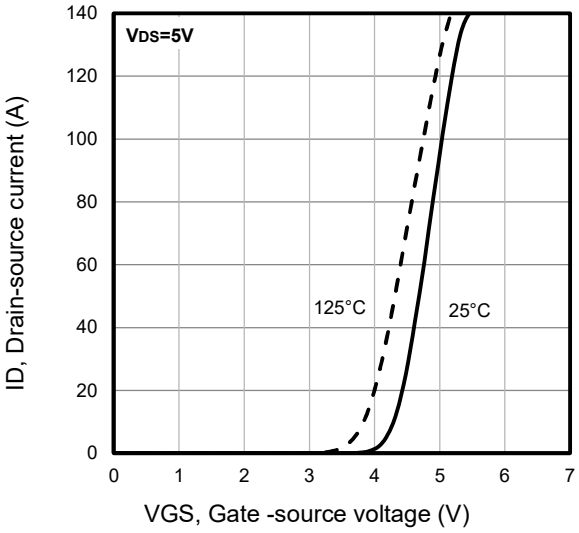


Fig3. Typical transfer characteristics

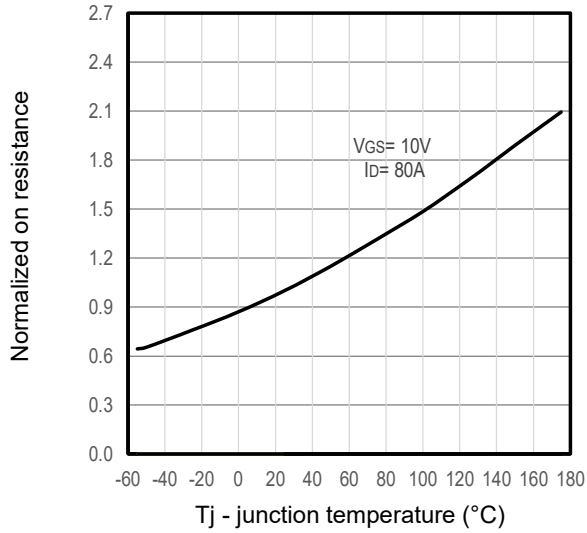


Fig4. Typical normalized on-resistance Vs. Tj

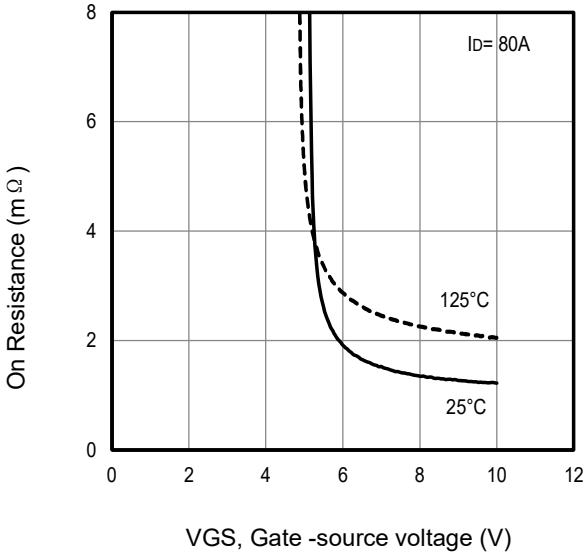


Fig5. Typical on resistance Vs gate -source voltage

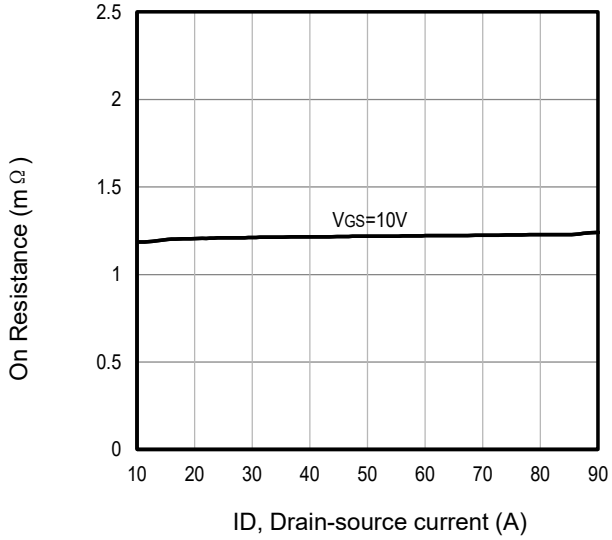


Fig6. Typical on resistance Vs drain current

Typical Characteristics

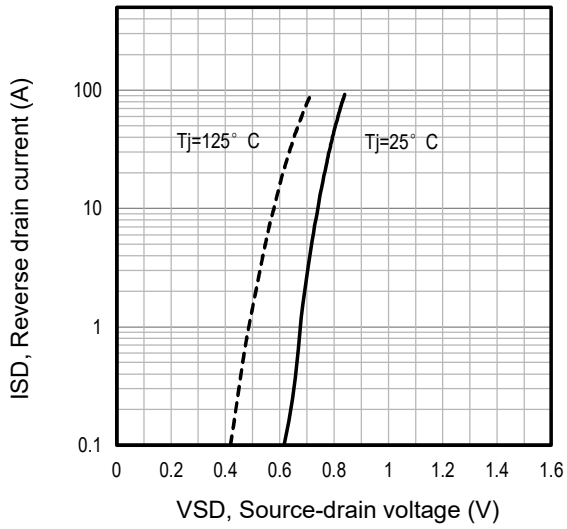


Fig7. Typical source-drain diode forward voltage

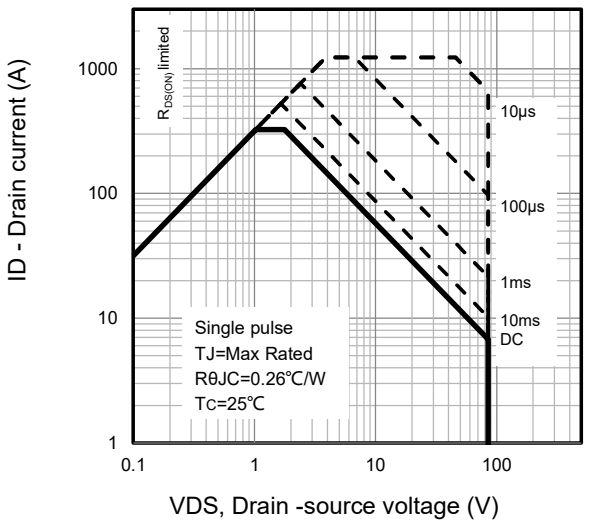


Fig8. Maximum safe operating area

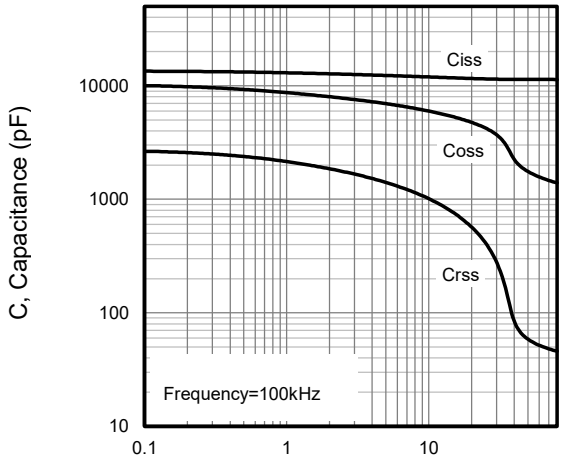


Fig9. Typical capacitance Vs. drain-source voltage

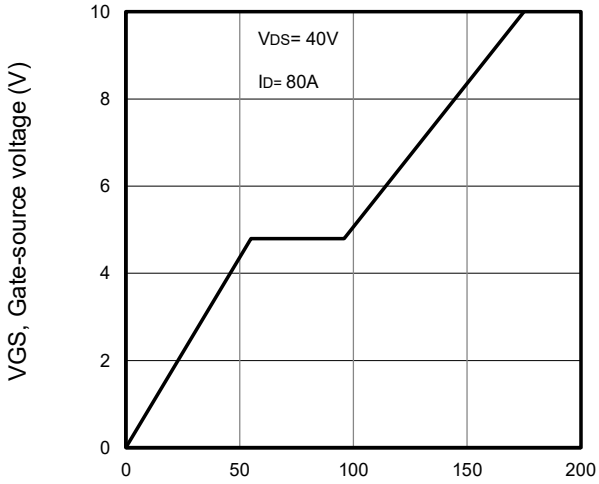


Fig10. Typical gate charge Vs. gate-source voltage

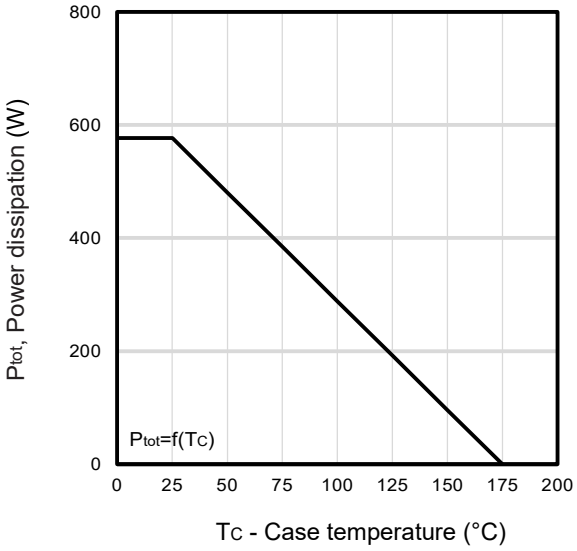


Fig11. Power dissipation Vs. case temperature

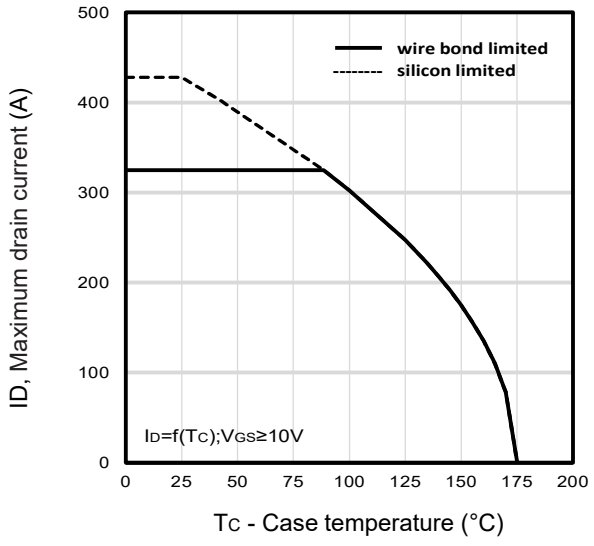


Fig12. Maximum drain current Vs. case temperature

Typical Characteristics

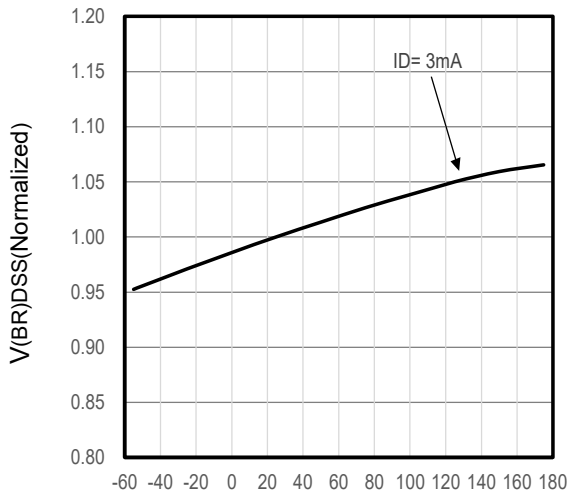


Fig13. Typical $V_{(BR)DSS}$ Vs Tj

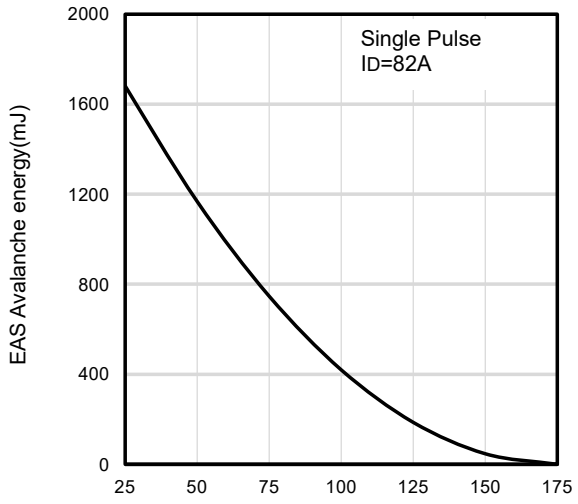


Fig14. Maximum avalanche energy vs temperature (°C)

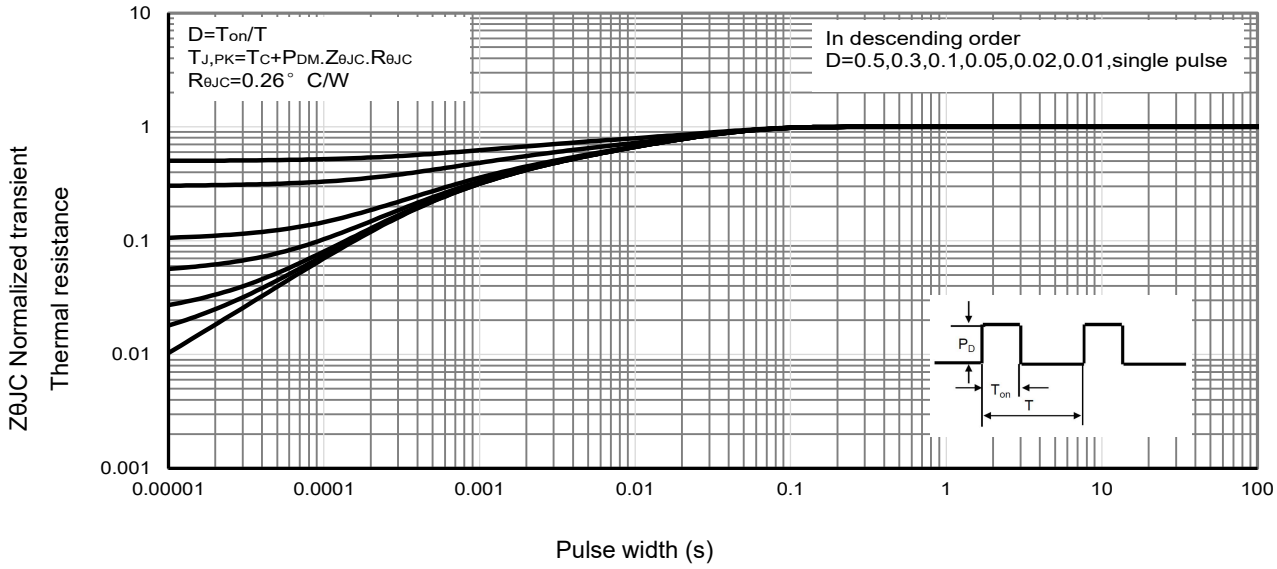


Fig15 . Normalized maximum transient thermal impedance

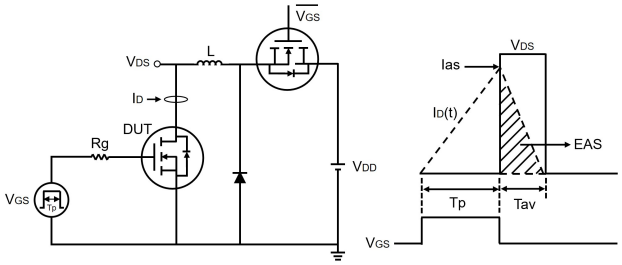


Fig16. Unclamped inductive test circuit and waveforms

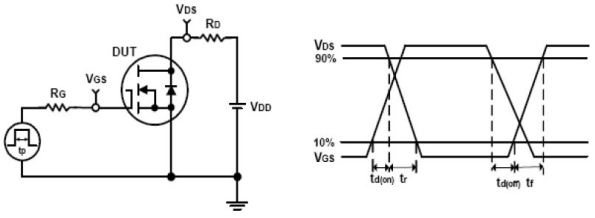
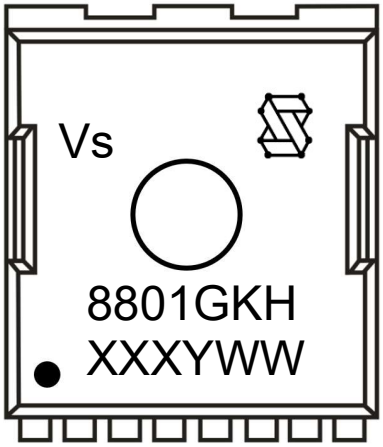


Fig17. Switching time test circuit and waveforms

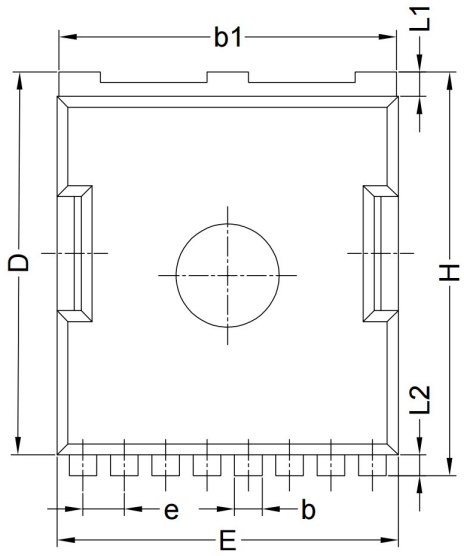
Marking Information

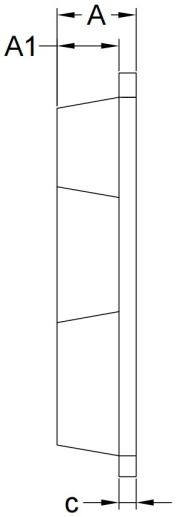


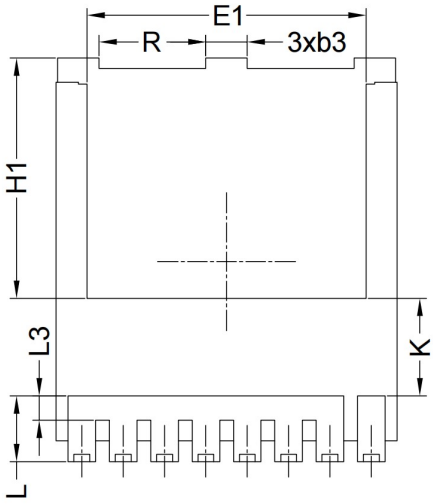
1st line: Vergiga Code（Vs）， Vergiga Logo
2nd line: Part Number（8801GKH）
3rd line: Date code （XXXYWW）
XXX: Wafer Lot Number Code , code changed with Lot Number
Y: Year Code，refer to table below
WW: Week Code (01 to 53)

Code	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030

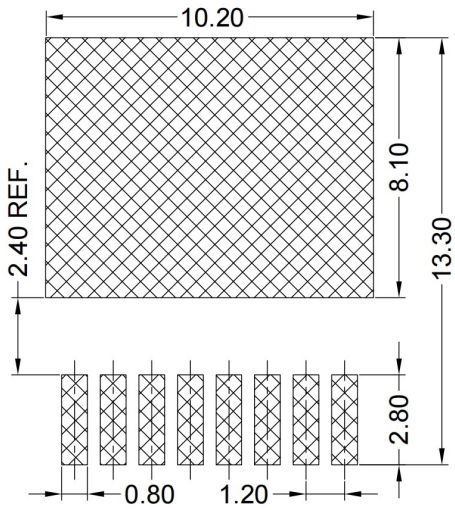
TOLL Package Outline Data(for M)







Symbol	DIMENSIONS (unit : mm)		
	Min	Typ	Max
A	2.20	2.30	2.40
A1	1.70	1.80	1.90
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b3	1.10	1.20	1.30
c	0.40	0.50	0.60
D	10.28	10.38	10.48
E	9.80	9.90	10.00
E1	8.00	8.10	8.20
e	1.20BSC		
H	11.58	11.68	11.78
H1	6.95BSC		
K	2.80REF		
L	1.40	1.90	2.10
L1	0.60	0.70	0.80
L2	0.50	0.60	0.70
L3	0.30	0.70	0.80
R	3.00	3.10	3.20

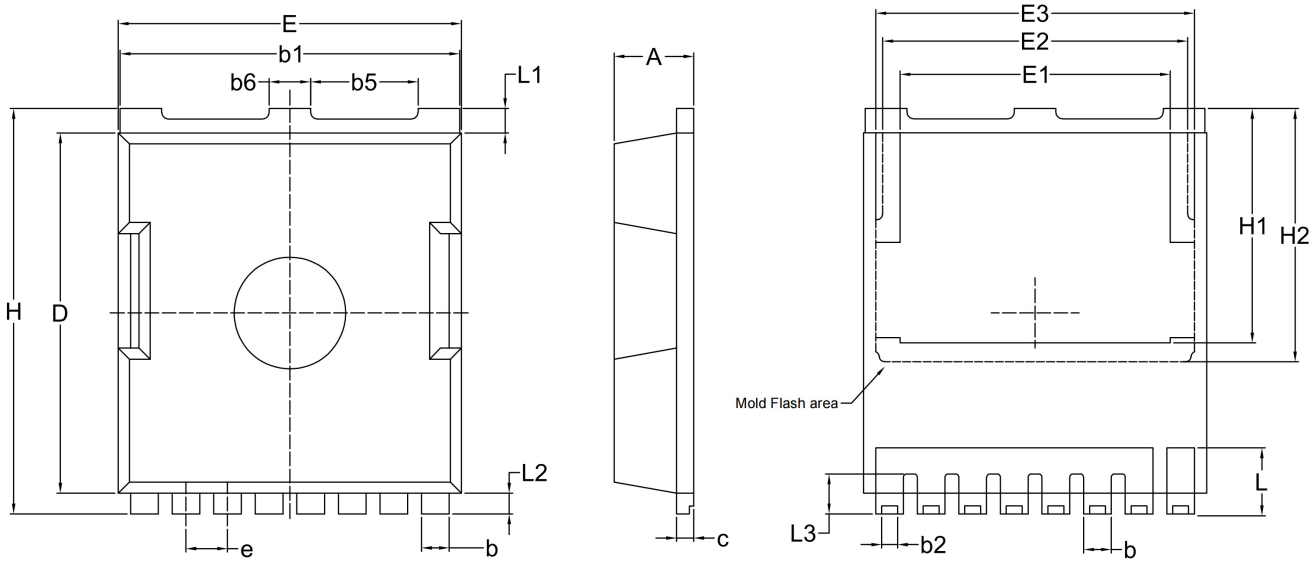


Land Pattern
(Only For Reference)

Note:

1. Dimensions do NOT include mold flash protrusions or gate burrs.

TOLL Package Outline Data(for JJ)



Note:

1. Dimensions do not include mold flash protrusions or gate burrs.

Symbol	DIMENSIONS (unit : mm)			Symbol	DIMENSIONS (unit : mm)		
	Min	Typ	Max		Min	Typ	Max
A	2.20	2.30	2.40	E2	--	8.80	--
b	0.70	0.80	0.90	E3	--	9.20	--
b1	9.70	9.80	9.90	e	1.20 BSC		
b2	0.42	0.46	0.50	H	11.58	11.68	11.78
b5	--	3.10	--	H1	6.65	6.75	6.85
b6	--	1.20	--	H2	--	7.30	--
c	0.492	0.500	0.508	L	1.70	1.90	2.10
D	10.28	10.38	10.48	L1	--	0.70	--
E	9.80	9.90	10.00	L2	--	0.60	--
E1	--	7.80	--	L3	1.05	1.15	1.25