

Features

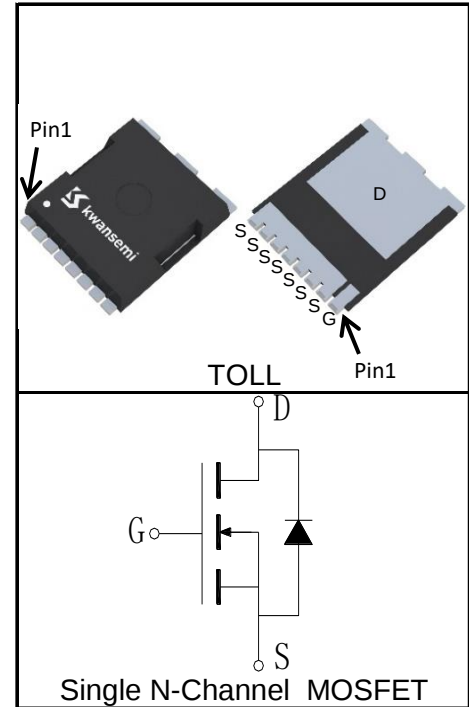
- 100V/268A,
 $R_{DS(on)} = 2m\Omega(Typ.)@V_{GS}=10V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested
- Good Thermal Performance

Applications

- Motor Control
- Battery Power Management



Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 20	
T_{Jmax}	Maximum Junction Temperature	175	$^\circ\text{C}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$	A
Mounted on Large Heat Sink			
$I_{DP}^{(1)}$	Pulse Drain Current	$T_C=25^\circ\text{C}$	A
$I_D^{(2)}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ\text{C}$	A
		$T_C=100^\circ\text{C}$	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.45	$^\circ\text{C/W}$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	40	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	1332	mJ

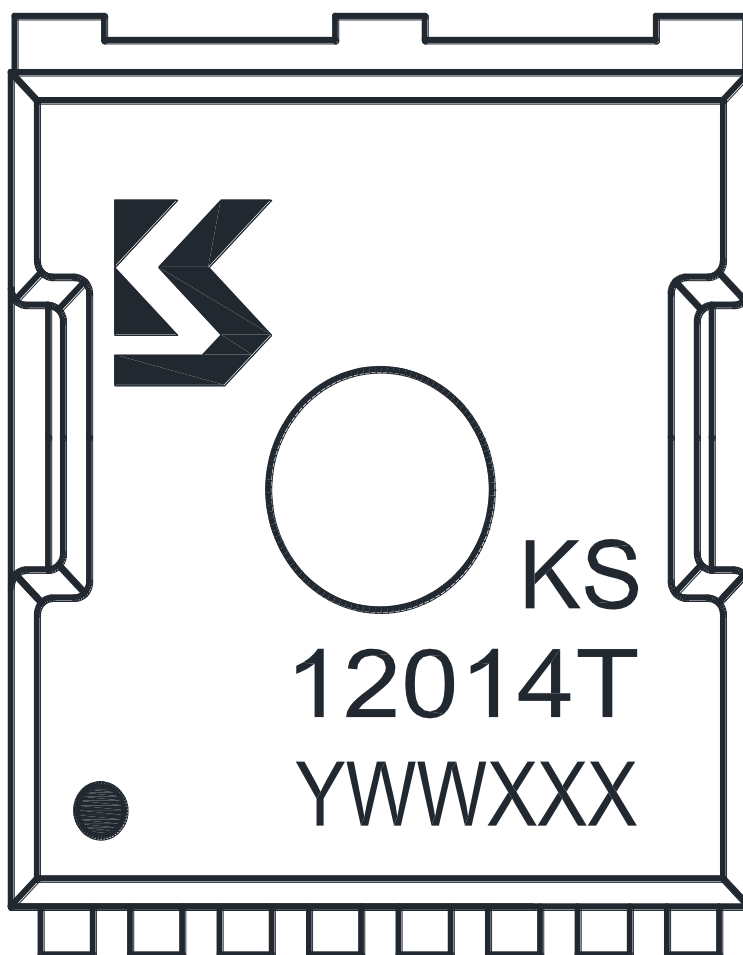
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS12014LAT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =40A		2	2.4	mΩ
		V _{GS} =6V, I _{DS} =20A		2.8	3.6	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V		0.83	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dI _{SD} /dt=100A/μs		67		ns
Q _{rr}	Reverse Recovery Charge			187		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=200KHz		9140		pF
C _{oss}	Output Capacitance			1105		
C _{rss}	Reverse Transfer Capacitance			55		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, I _{DS} =40A, V _{GEN} =10V, R _G =3Ω		34		ns
t _r	Turn-on Rise Time			29		
t _{d(OFF)}	Turn-off Delay Time			98		
t _f	Turn-off Fall Time			53		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =40A		160		nC
Q _{gs}	Gate-Source Charge			38		
Q _{gd}	Gate-Drain Charge			47		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} , Starting $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = 73A$, $L = 0.5\text{mH}$, $V_{DD} = 50V$, $R_G = 25\Omega$, $V_{GS} = 10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = 50A$, $L = 0.5\text{mH}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

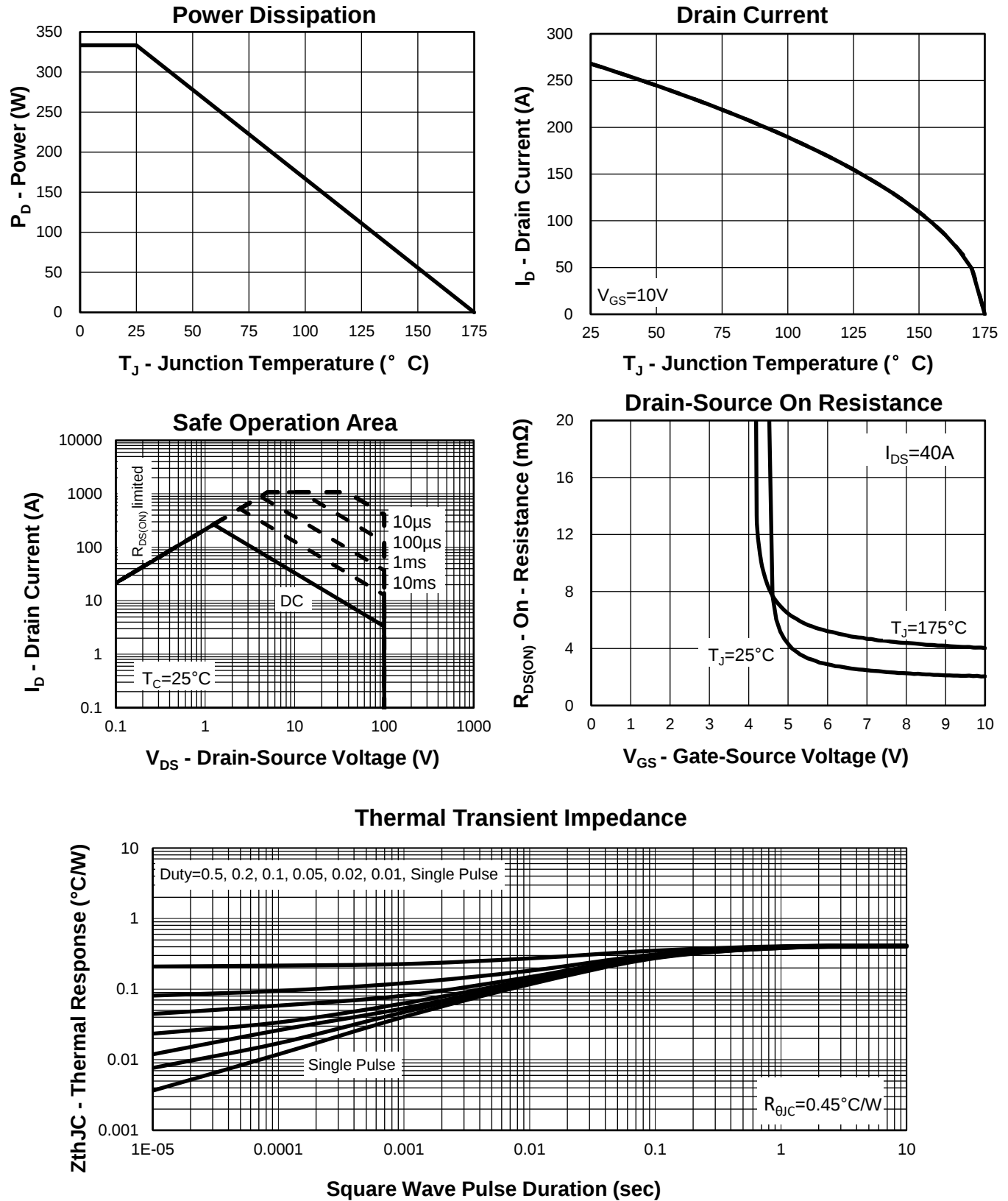
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS12014LAT	TOLL	Tape&Reel	2000	13"	24mm

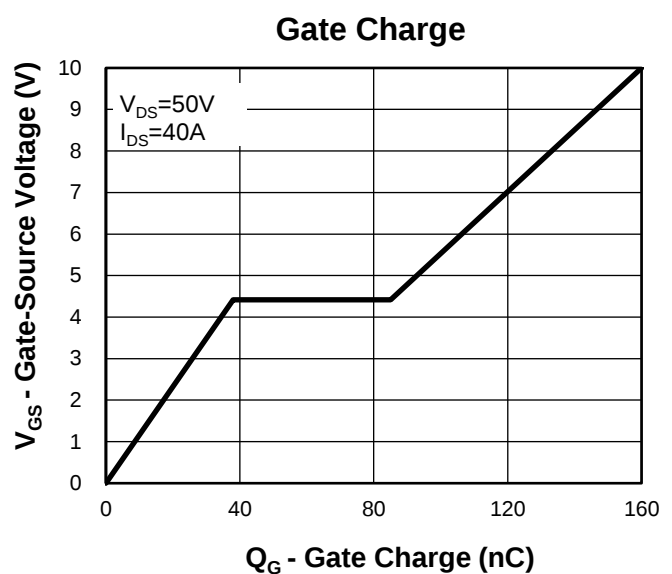
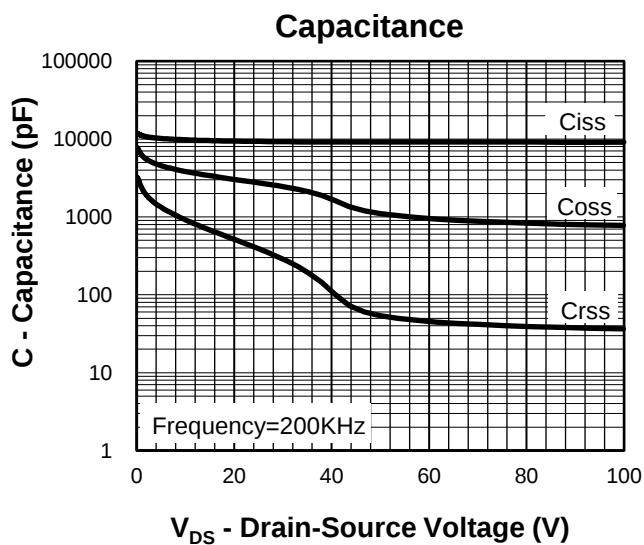
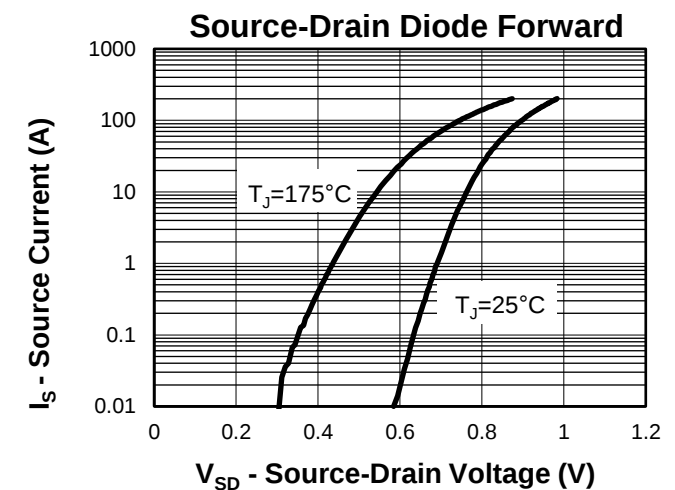
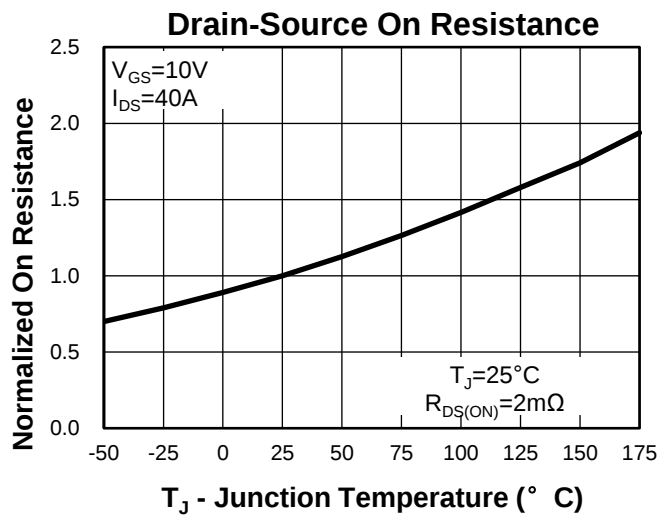
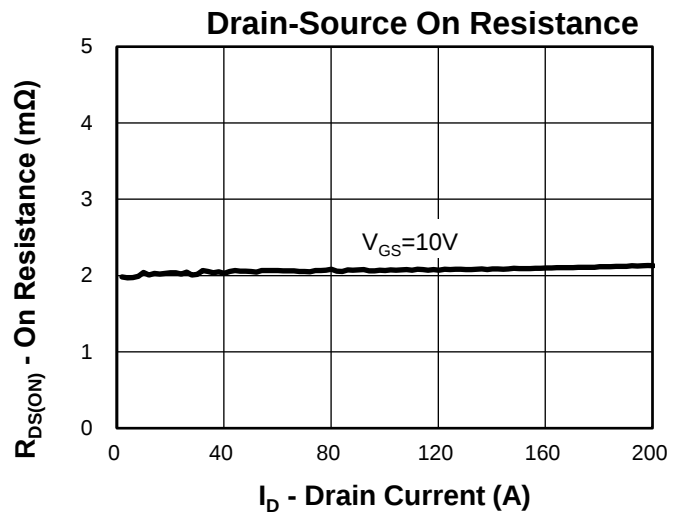
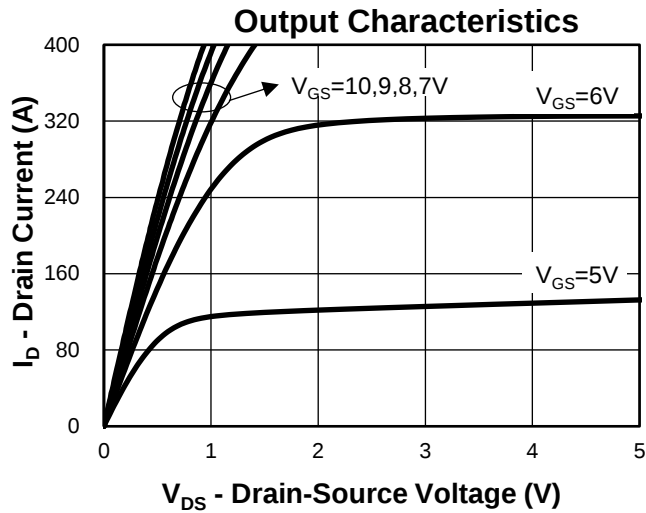


1st Line: Kwansemi LOGO
2nd Line: Kwansemi Code(KS)
3rd Line: Part Number(12014T)
4th Line: Lot Number(YWWXXX)

Typical Characteristics

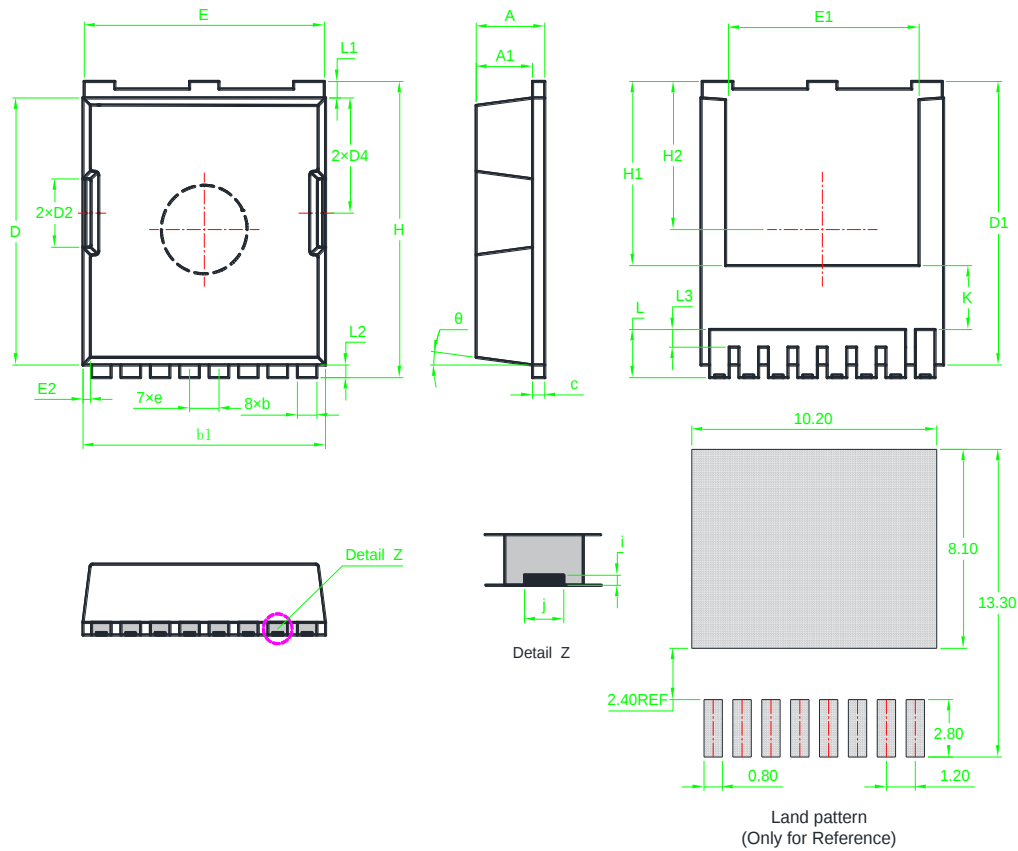


Typical Characteristics



Package Information

TOLL



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.40	0.087	0.091	0.094	e	1.20BSC			0.047REF		
A1	1.70	1.80	1.90	0.067	0.071	0.075	H	11.58	11.68	11.78	0.455906	0.459843	0.46378
b	0.65	*	0.90	0.026	*	0.035	H1	6.95BSC			0.274BSC		
b1	9.80	9.90	10.00	0.386	0.390	0.394	H2	5.90BSC			0.232BSC		
c	0.40	0.50	0.60	0.016	0.020	0.024	i	0.10REF			0.004REF		
D	10.28	10.38	10.48	0.405	0.409	0.413	j	0.40REF			0.016REF		
D1	10.98	11.08	11.28	0.432	0.436	0.444	K	3.0REF			0.118REF		
D2	3.20	3.30	3.40	0.126	0.130	0.134	L	1.60	*	2.10	0.063	*	0.083
D4	4.45	4.55	4.65	0.175	0.179	0.183	L1	0.60	0.70	0.80	0.024	0.028	0.031
E	9.80	9.90	10.00	0.386	0.390	0.394	L2	0.50	0.60	0.70	0.020	0.024	0.028
E1	8.00	8.10	8.20	0.315	0.319	0.323	L3	0.40	*	0.80	0.016	*	0.031
E2	0.30	*	0.80	0.012	*	0.031	θ	10° REF			10° REF		

Note: Dimensions do not inclusive burrs and mold flash.

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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