

Features

- 100V/36A,
 $R_{DS(ON)} = 16m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 21m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested

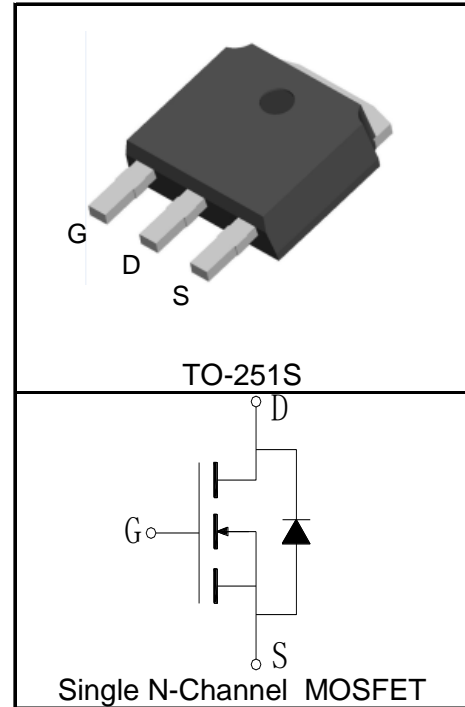
Applications

- Power Switching Appliaction
- LED Backlighting



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage	100	V	
V_{GSS}	Gate-Source Voltage	± 20		
T_J	Maximum Junction Temperature	175	$^\circ C$	
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$	
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$	36	A
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$	144	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ C$	36	A
		$T_C=100^\circ C$	25	
P_D	Maximum Power Dissipation	$T_C=25^\circ C$	52	W
		$T_C=100^\circ C$	26	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.9	$^\circ C/W$	
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^\circ C/W$	
Drain-Source Avalanche Ratings				
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	36	mJ	

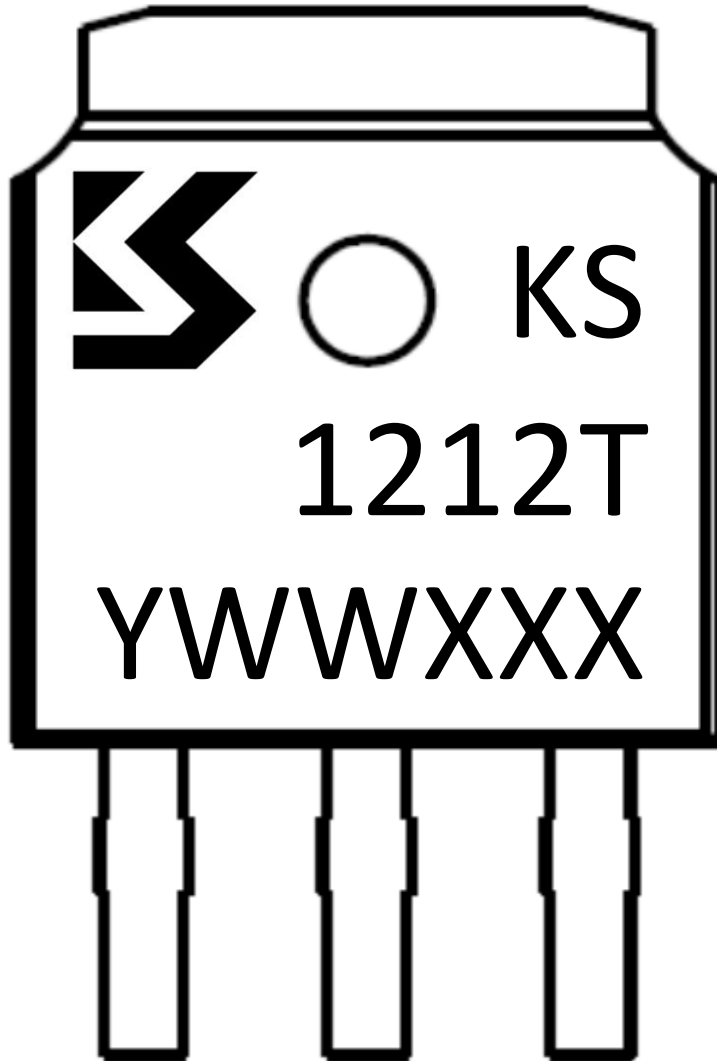
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS1212KA2T			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	100			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$			1	μA
		$T_J=125^\circ C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.2	1.8	2.3	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=20A$		16	20	$m\Omega$
		$V_{GS}=4.5V, I_{DS}=16A$		21	30	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=20A, V_{GS}=0V$		0.91	1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=20A, di_{SD}/dt=100A/\mu s$		42		ns
Q_{rr}	Reverse Recovery Charge			55		nC
Dynamic Characteristics⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1.2		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Frequency=1.0MHz		910		pF
C_{oss}	Output Capacitance			125		
C_{rss}	Reverse Transfer Capacitance			5		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, I_{DS}=20A,$ $V_{GEN}=10V, R_G=3\Omega$		6		ns
t_r	Turn-on Rise Time			10		
$t_{d(OFF)}$	Turn-off Delay Time			19		
t_f	Turn-off Fall Time			7		
Gate Charge Characteristics⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V,$ $I_{DS}=20A$		18		nC
Q_{gs}	Gate-Source Charge			3.9		
Q_{gd}	Gate-Drain Charge			4.3		

- 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 $T_{Jmax}, I_{AS}=12A, L=0.5mH, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^\circ C$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

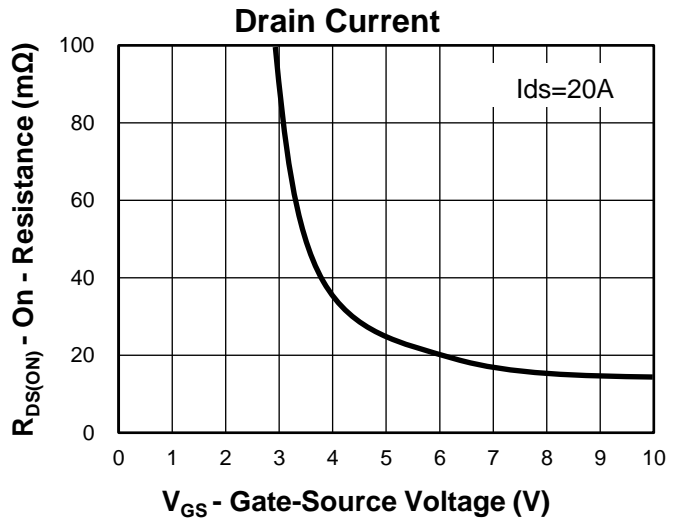
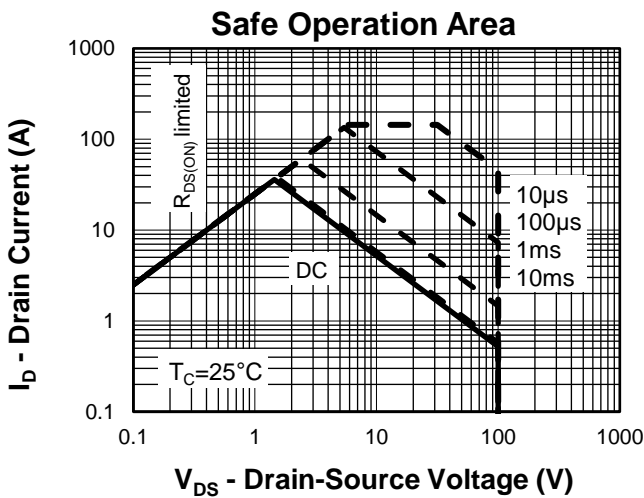
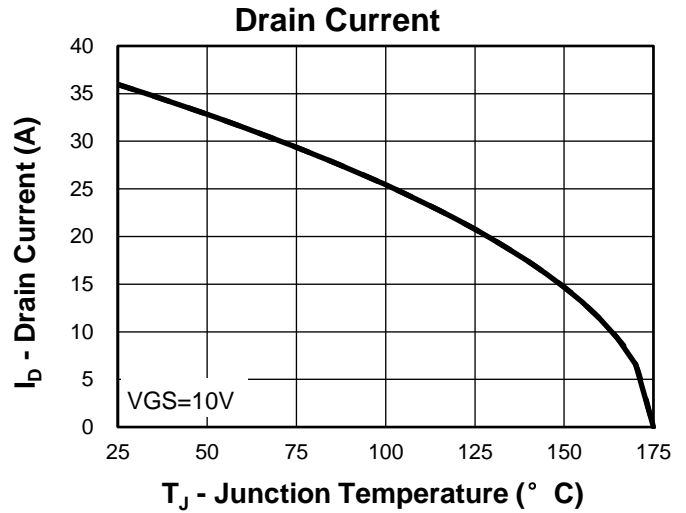
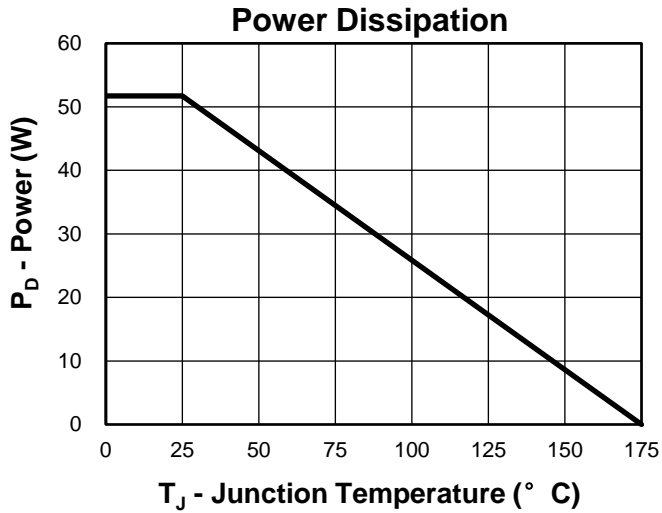
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS1212KA2T	TO-251S	Tube	75	-	-

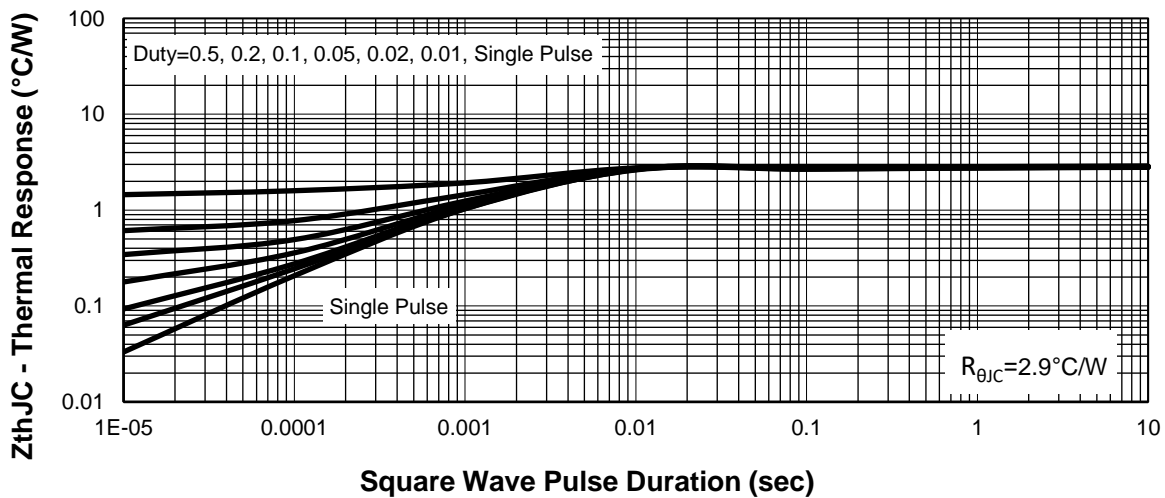


1st Line: Kwansemi LOGO, Kwansemi Code(KS)
2nd Line: Part Number(1212T)
3rd Line: Lot Number(YWWXXX)

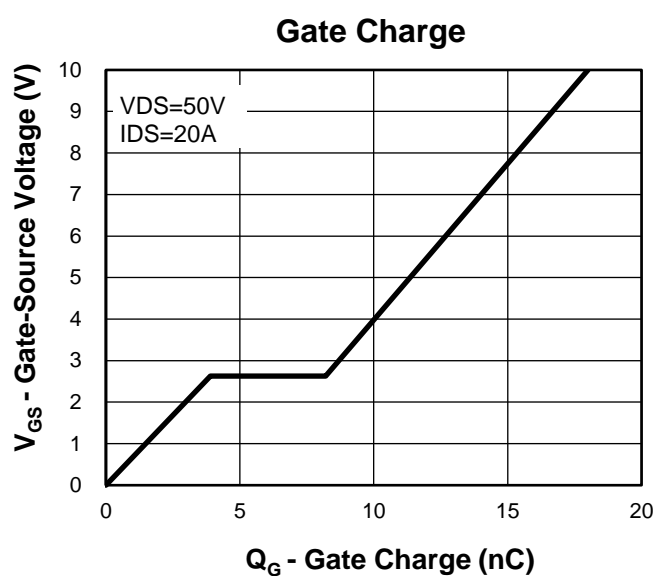
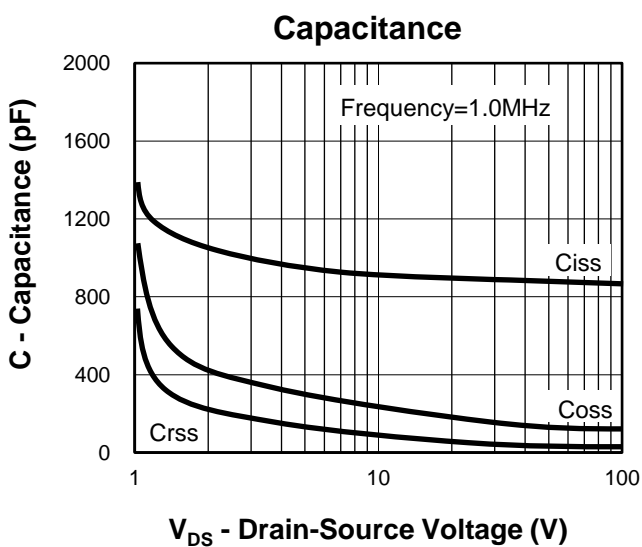
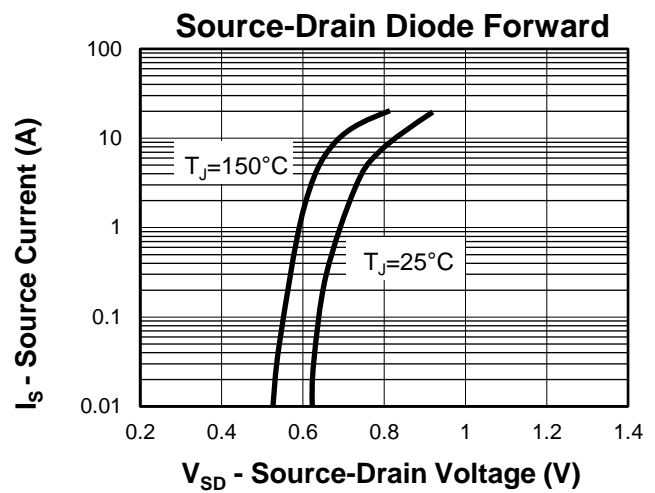
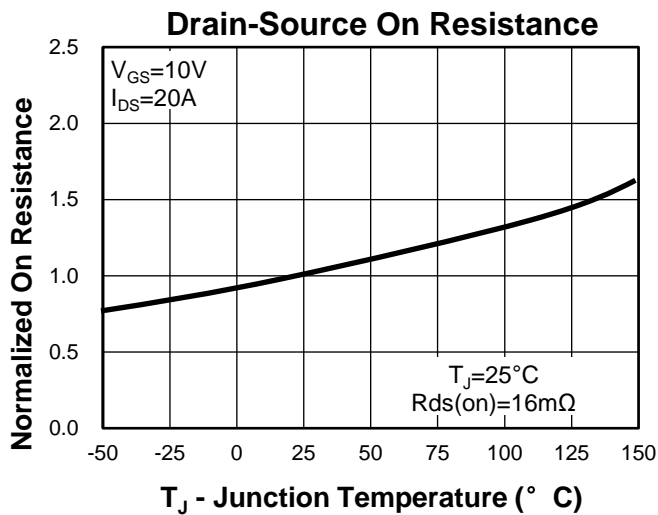
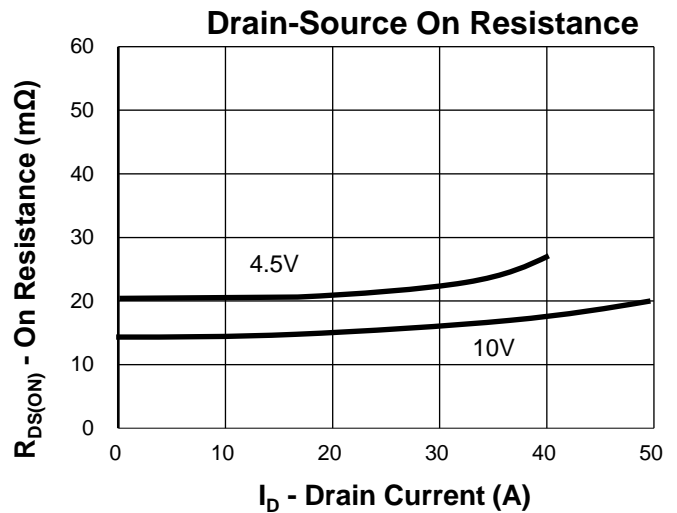
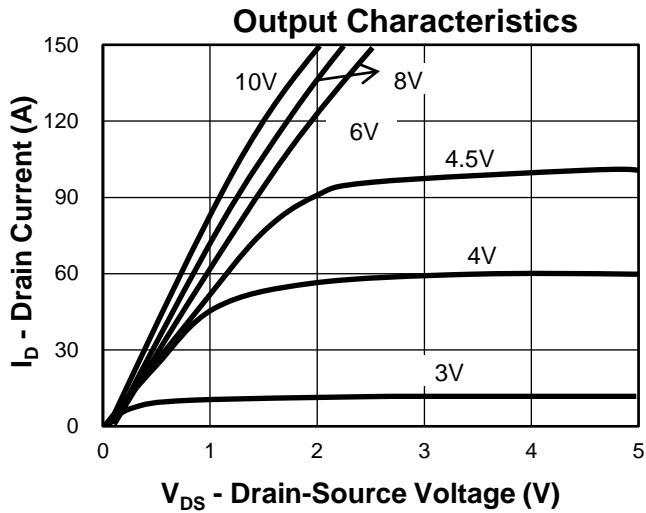
Typical Characteristics

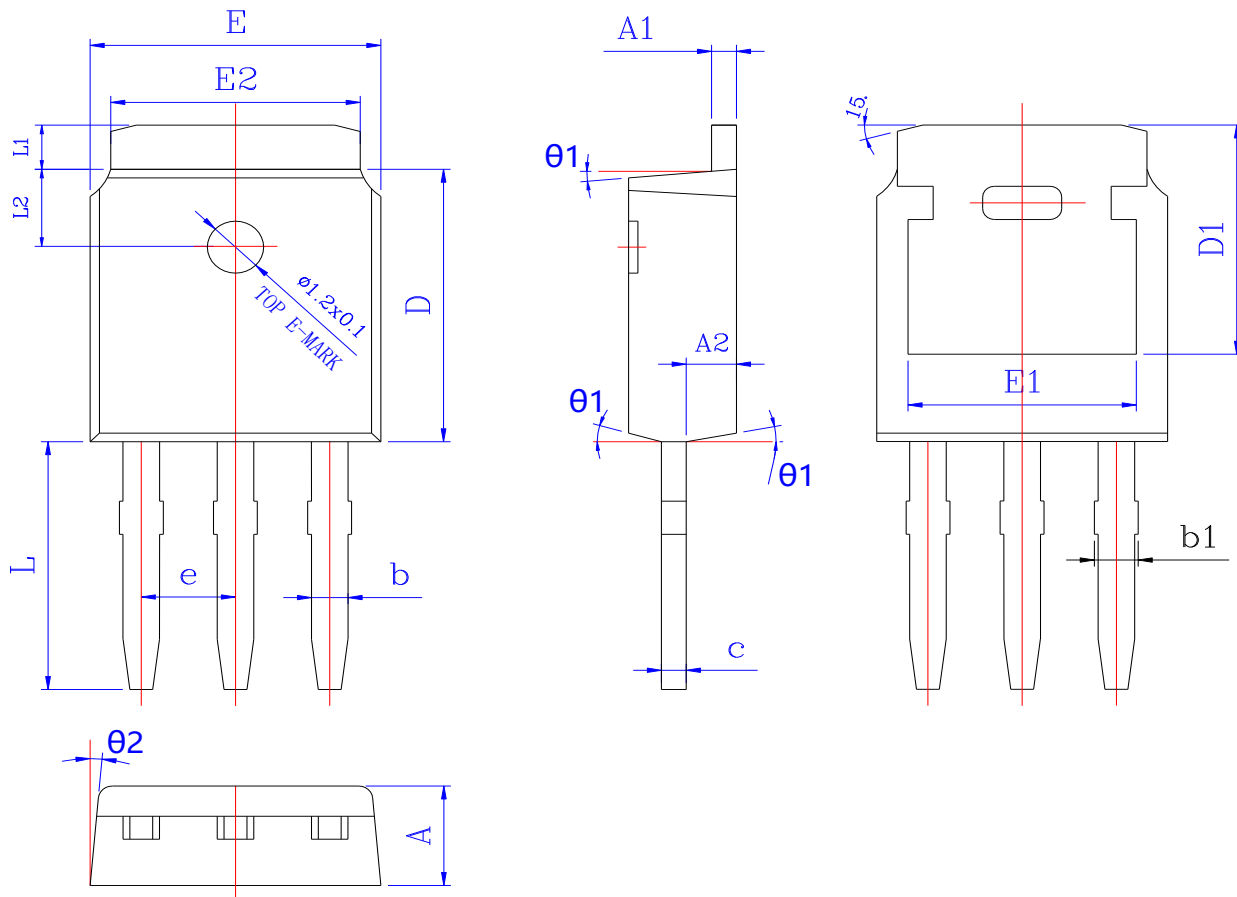


Thermal Transient Impedance



Typical Characteristics



Package Information
TO-251S


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.300	2.380	0.087	0.091	0.094
A1	0.460	0.510	0.560	0.018	0.020	0.022
A2	0.900	1.010	1.100	0.035	0.040	0.043
b	0.720	0.785	0.850	0.028	0.031	0.033
b1	0.760	0.860	0.960	0.030	0.034	0.038
c	0.470	0.525	0.580	0.019	0.021	0.023
D	6.000	6.100	6.200	0.236	0.240	0.244
D1	5.30REF					
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.700	4.810	4.920	0.185	0.189	0.194
E2	5.230	5.345	5.460	0.206	0.210	0.215
e	2.280 REF			0.090 REF		
L	3.300	-	4.200	0.130	-	0.165
L1	0.900	1.075	1.250	0.035	0.042	0.049
L2	1.80REF					
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	5°	7°	9°	5°	7°	9°

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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