

Features

- 100V/10A,
 $R_{DS(ON)} = 200m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 210m\Omega(Typ.)@V_{GS}=4.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

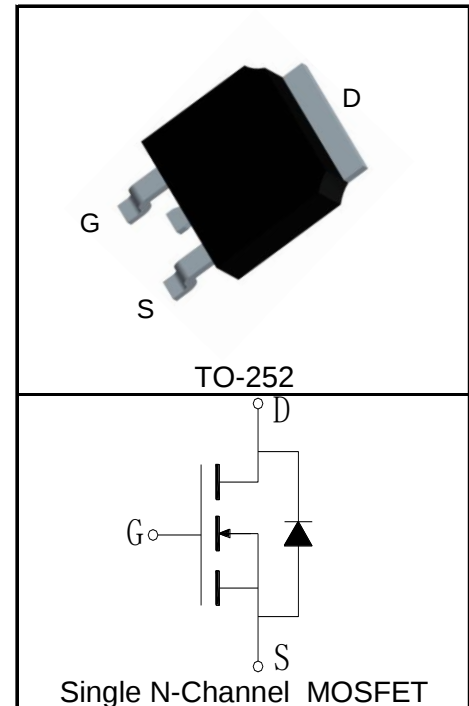
Applications

- 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	$T_C=25^{\circ}C$ 10	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^{\circ}C$ 40	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^{\circ}C$ 10	A
		$T_C=100^{\circ}C$ 7.1	
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$ 30	W
		$T_C=100^{\circ}C$ 15	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	5	$^{\circ}C/W$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^{\circ}C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	6	mJ

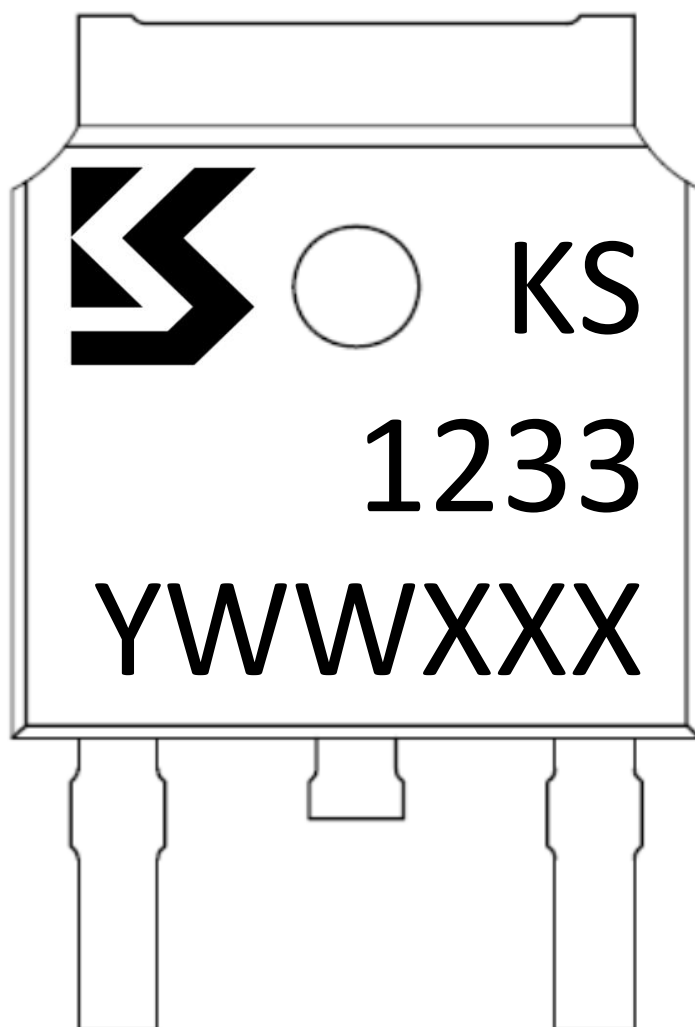
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS1233DB			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	1.1	1.8	2.3	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} =5A		200	250	mΩ
		V _{GS} =4.5V, I _{DS} =3A		210	280	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =5A, V _{GS} =0V		0.85	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =5A, dI _{SD} /dt=100A/μs		19		ns
Q _{rr}	Reverse Recovery Charge			44		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.6		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz		405		pF
C _{oss}	Output Capacitance			35		
C _{rss}	Reverse Transfer Capacitance			20		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, I _{DS} =5A, V _{GEN} =10V, R _G =6Ω		9		ns
t _r	Turn-on Rise Time			12		
t _{d(OFF)}	Turn-off Delay Time			27		
t _f	Turn-off Fall Time			10		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _{DS} =5A		10		nC
Q _{gs}	Gate-Source Charge			1.8		
Q _{gd}	Gate-Drain Charge			2.4		

- 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 $T_{Jmax}, I_{AS}=5A, L=0.5\text{mH}, V_{DD}=48V, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - 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
KS1233DB	TO-252	Tape&Reel	2500	13"	16mm

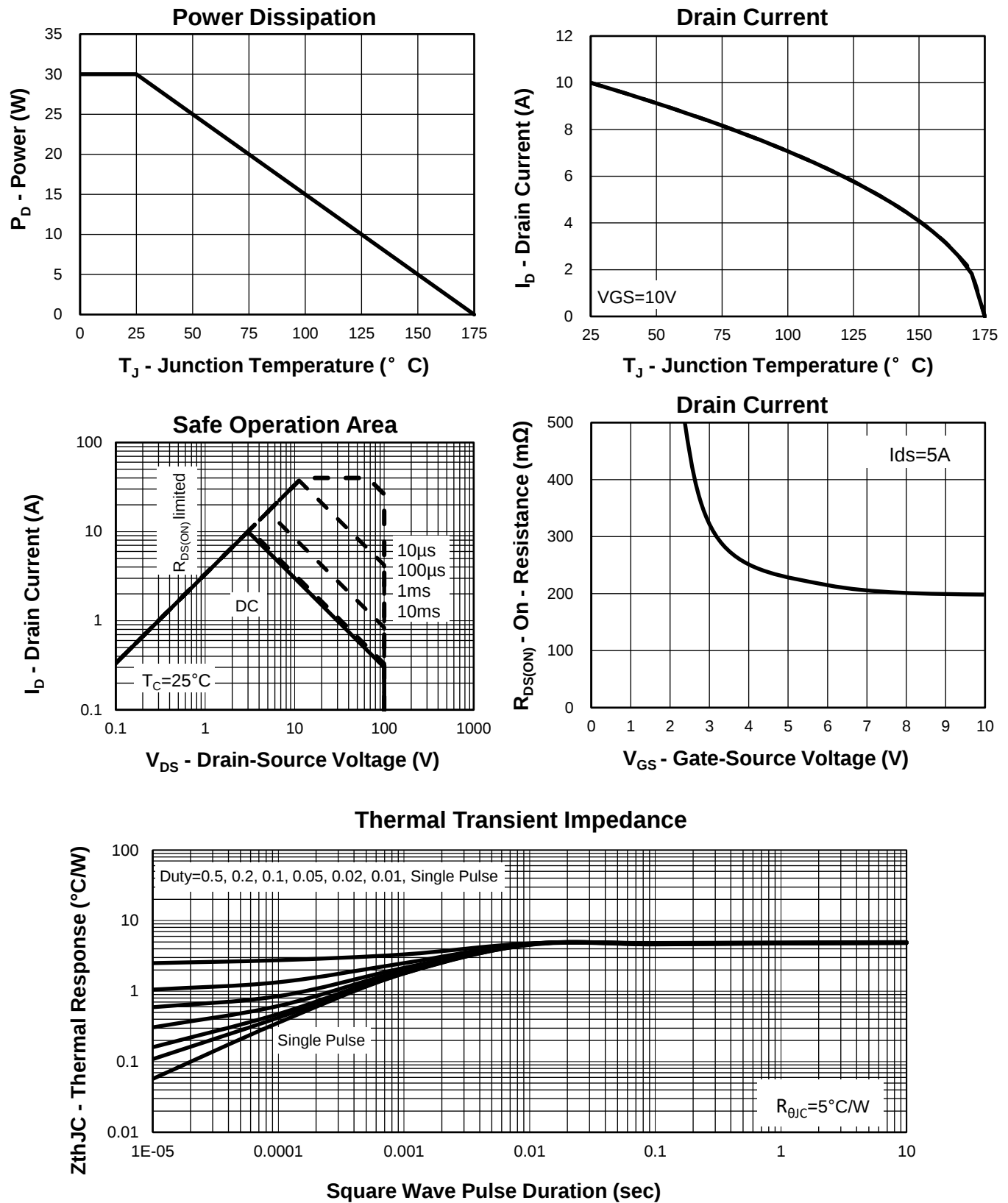


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

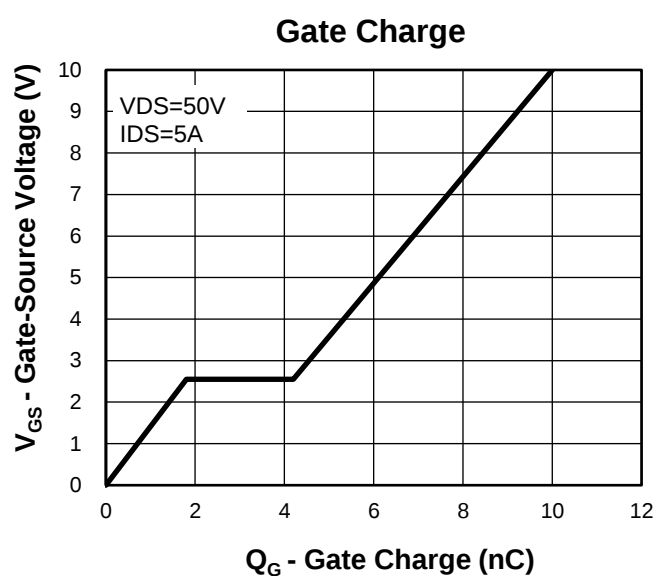
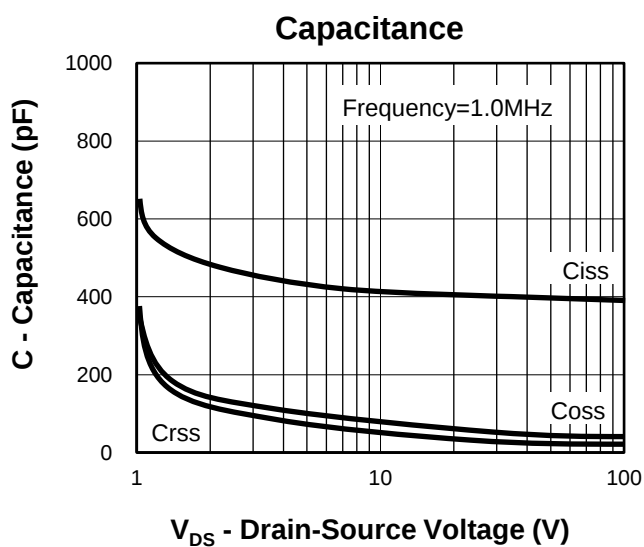
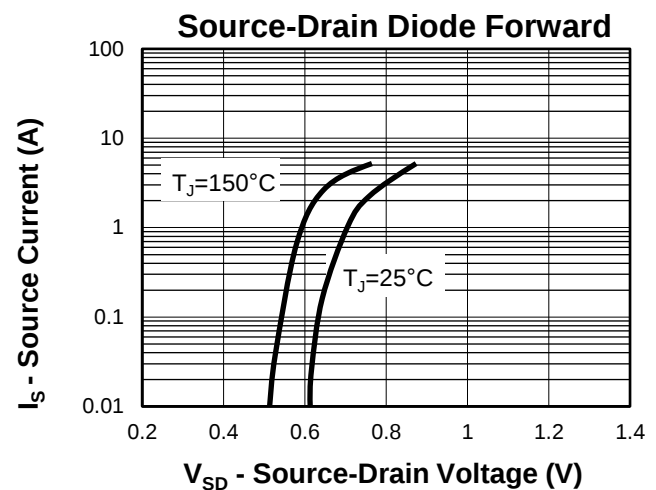
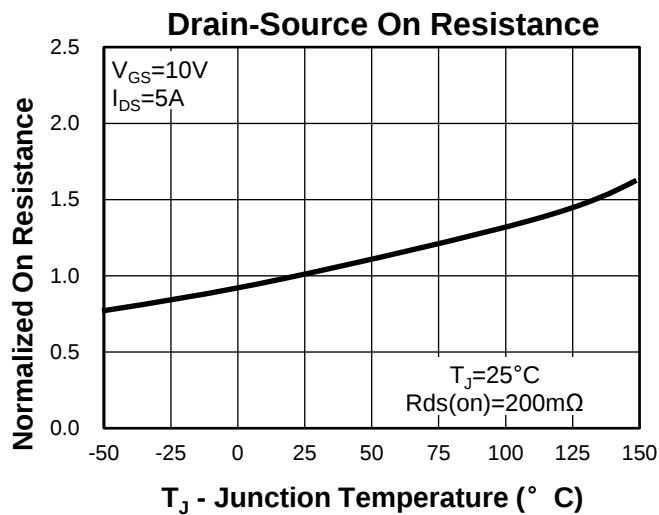
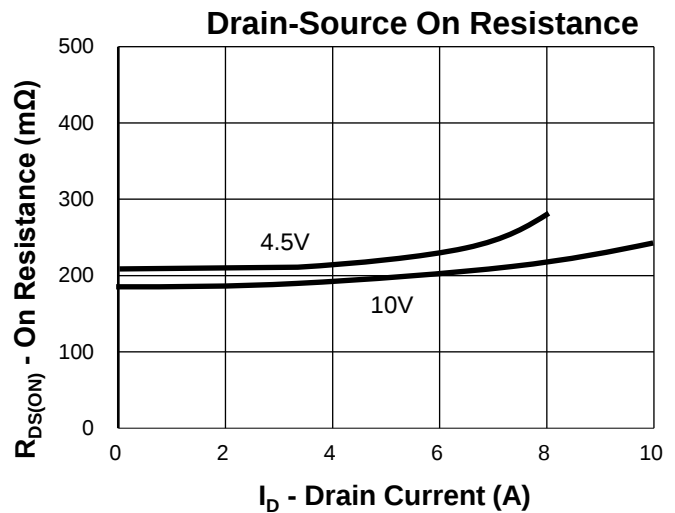
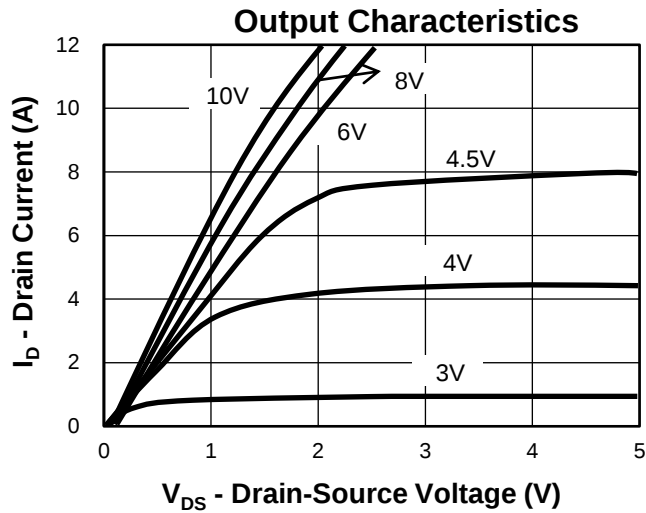
2nd Line: Part Number(1233)

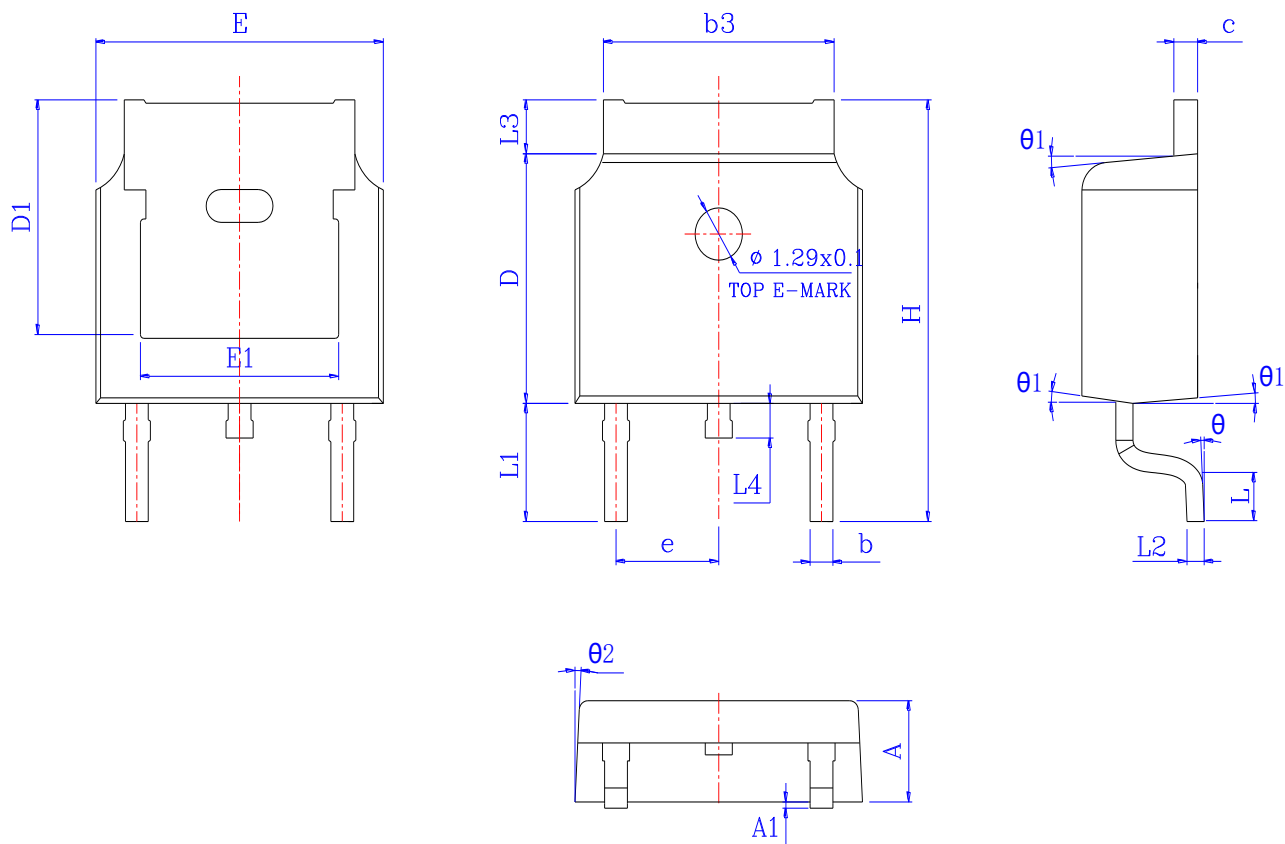
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



Typical Characteristics



Package Information
TO-252


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.300	2.400	0.087	0.091	0.094
A1	*	*	0.100	*	*	0.004
b	0.660	0.760	0.860	0.026	0.030	0.034
b3	5.130	5.295	5.460	0.202	0.208	0.215
c	0.470	0.535	0.600	0.019	0.021	0.024
D	6.000	6.100	6.200	0.236	0.240	0.244
D1	5.30 REF			0.20 REF		
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.700	*	*	0.185	*	*
e	2.28 REF			0.09 REF		
H	9.800	10.100	10.400	0.386	0.398	0.409
L	1.400	1.550	1.700	0.055	0.061	0.067
L1	2.743 REF			0.108 REF		
L2	0.510 BSC			0.020 BSC		
L3	0.900	1.075	1.250	0.035	0.042	0.049
L4	0.600	0.800	1.000	0.024	0.031	0.039
θ	0°	*	8°	0°	*	8°
$\theta 1$	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

Kwansemi Semiconductor Co.,Ltd

Email:Sales@kwansemi.com

Web:www.kwansemi.com

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