

Features

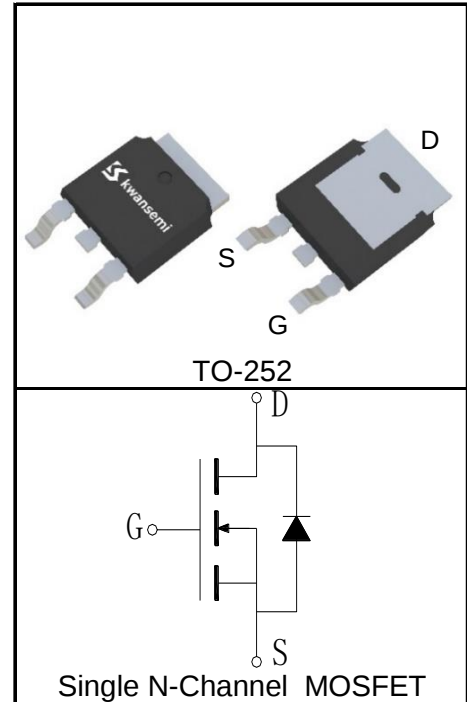
- 60V/42A,
 $R_{DS(ON)} = 13m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 20m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Gen2 Technology
- Low Capacitance to Minimize Driver Losses
- Fast Switching Speed

Applications

- Load Switch



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	60	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	$T_C=25^\circ\text{C}$ 42	A
Mounted on Large Heat Sink			
$I_{DP}^{(1)}$	Pulse Drain Current	$T_C=25^\circ\text{C}$ 168	A
$I_D^{(2)}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ\text{C}$ 42	A
		$T_C=100^\circ\text{C}$ 29	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 46	W
		$T_C=100^\circ\text{C}$ 23	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	3.2	$^\circ\text{C/W}$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	16	mJ

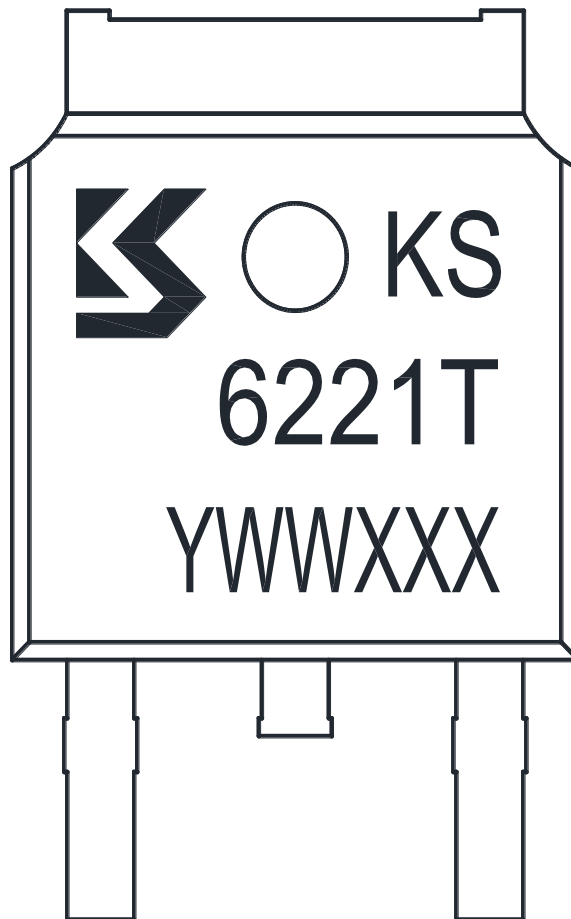
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.2	1.9	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} =20A		13	16	mΩ
		V _{GS} =4.5V, I _{DS} =15A		20	26	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V		0.95	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		15		ns
Q _{rr}	Reverse Recovery Charge			25		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		4		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz		495		pF
C _{oss}	Output Capacitance			210		
C _{rss}	Reverse Transfer Capacitance			8		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, I _{DS} =20A, V _{GEN} =10V, R _G =3Ω		9		ns
t _r	Turn-on Rise Time			8		
t _{d(OFF)}	Turn-off Delay Time			14		
t _f	Turn-off Fall Time			11		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =20A		8.7		nC
Q _{gs}	Gate-Source Charge			1.9		
Q _{gd}	Gate-Drain Charge			2.2		

- 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 $T_J = 25^{\circ}\text{C}$, $I_{ASmax} = 8A$, $L = 0.5\text{mH}$, $V_{DD} = 48V$, $R_G = 25\Omega$, $V_{GS} = 10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = 4A$, $L = 0.5\text{mH}$.
 - 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
KS6221DAT2	TO-252	Tape&Reel	2500	13"	16mm

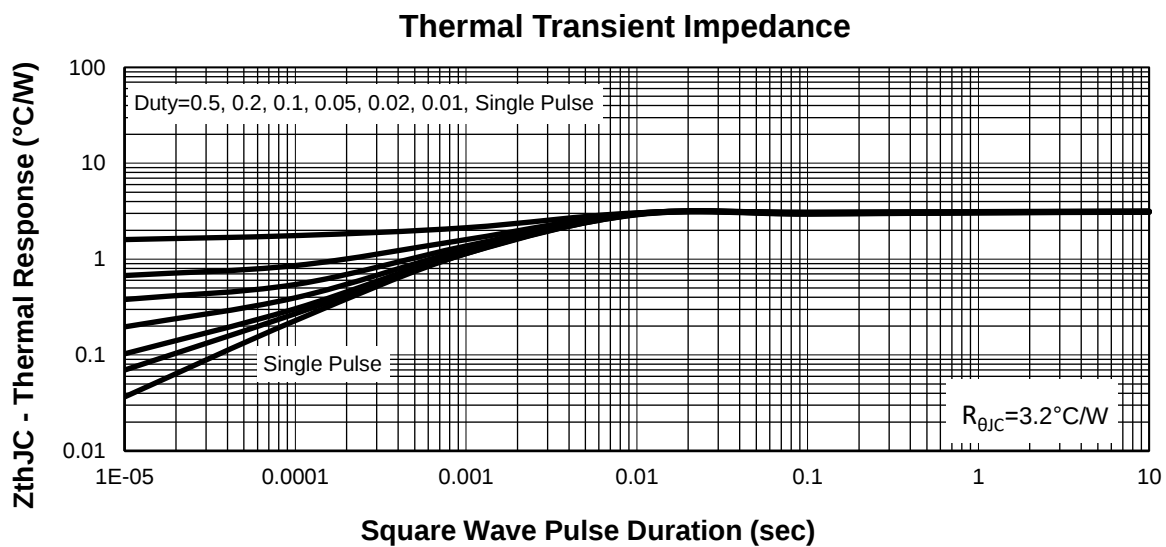
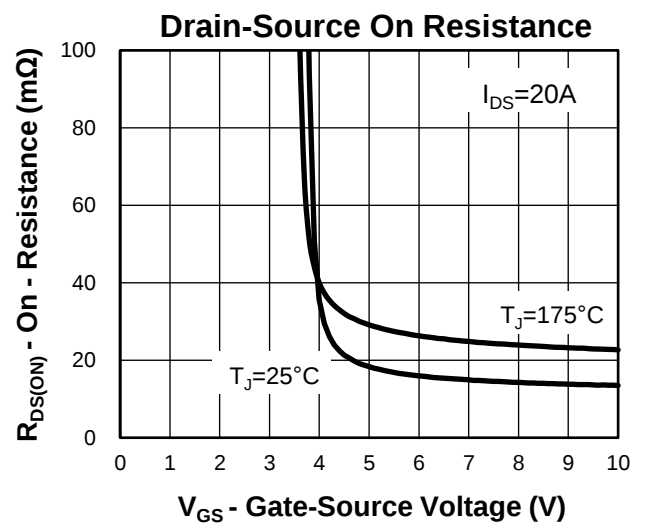
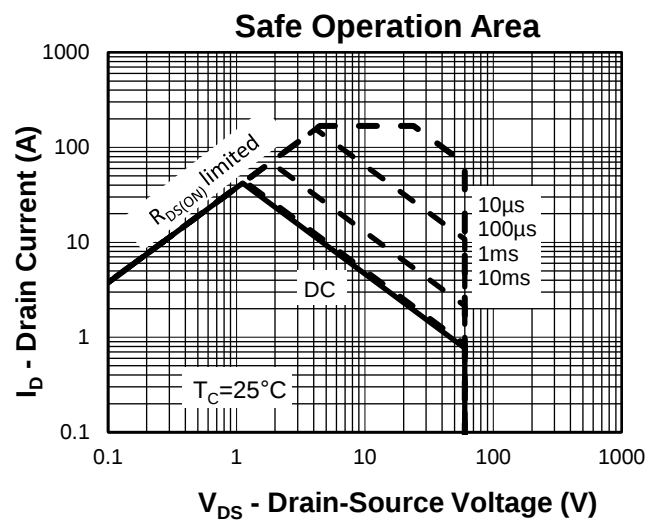
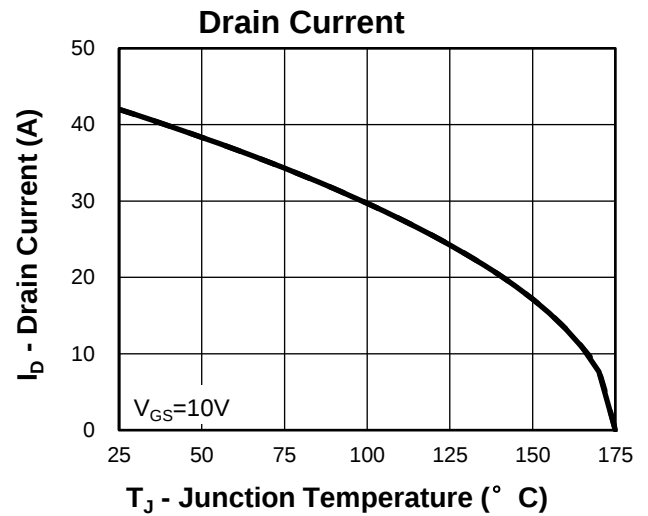
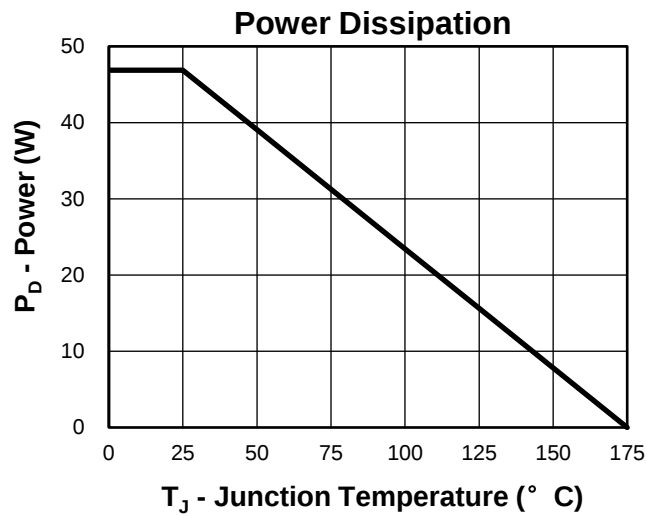


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

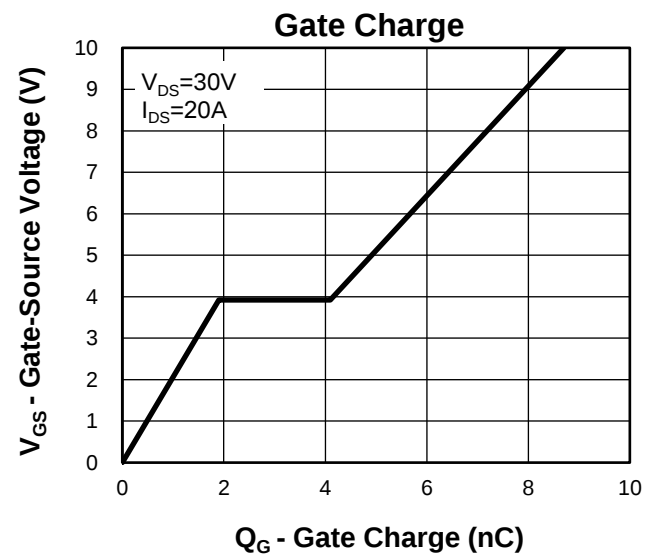
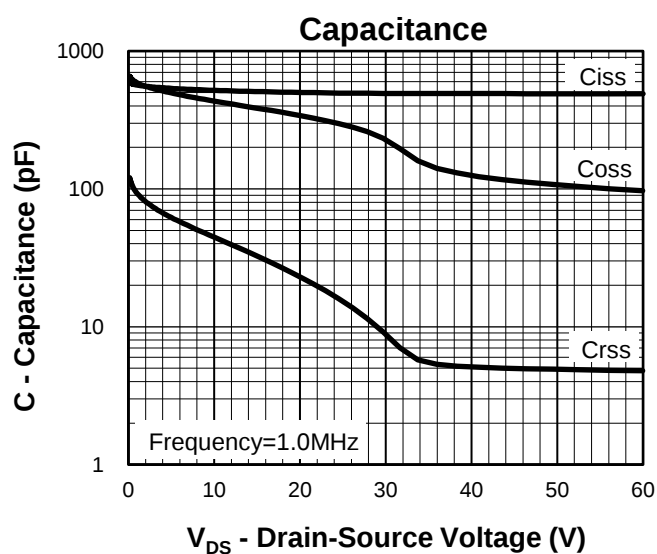
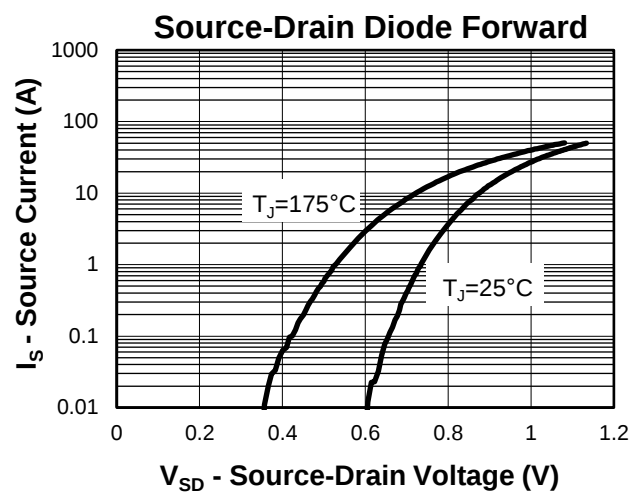
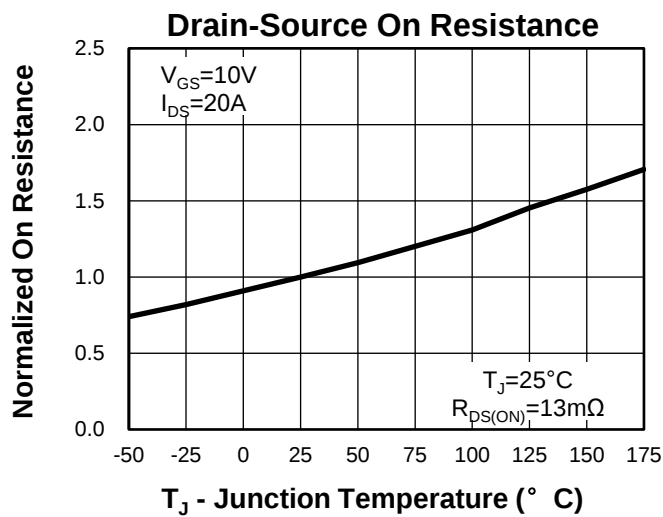
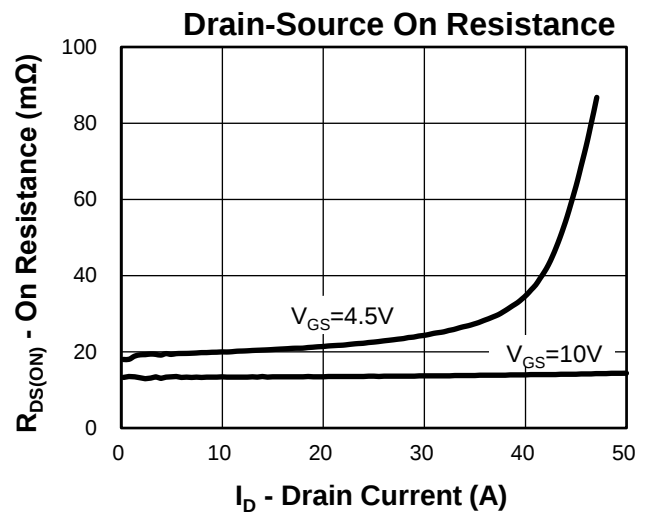
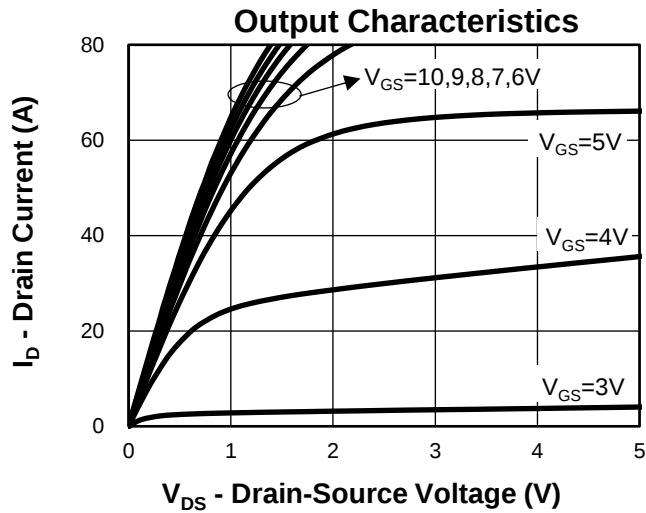
2nd Line: Part Number(6221T)

3rd Line: Lot Number(YWWXXX)

Typical Characteristics

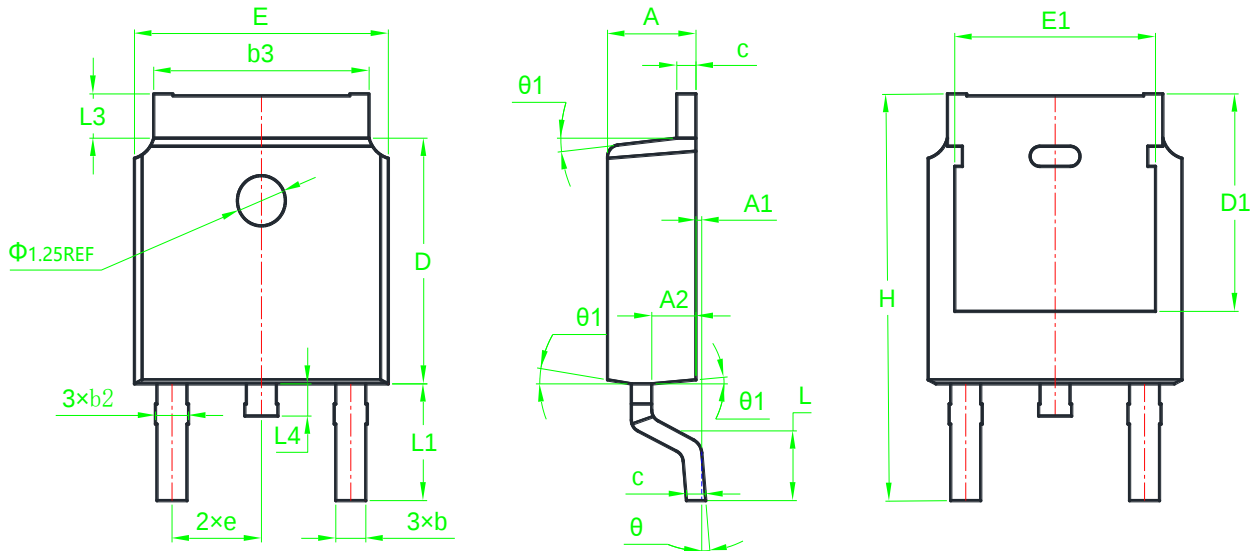


Typical Characteristics



Package Information

TO-252



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	2.20	2.30	2.38	0.087	0.091	0.094	E	6.40	6.60	6.70	0.252	0.260	0.264
A1	0.00	*	0.15	0.000	*	0.006	E1	4.55	*	5.15	0.179	*	0.203
A2	0.90	1.00	1.10	0.035	0.039	0.043	H	9.60	10.10	10.40	0.378	0.398	0.409
b	0.65	0.75	0.85	0.026	0.030	0.033	L	1.40	1.50	1.70	0.055	0.059	0.067
b2	0.72	*	0.90	0.028	*	0.035	L1	2.90REF			0.114REF		
b3	5.13	5.33	5.46	0.202	0.210	0.215	L3	0.90	*	1.25	0.035	*	0.049
c	0.47	0.51	0.54	0.019	0.020	0.021	L4	0.60	*	1.00	0.024	*	0.039
D	6.00	6.10	6.20	0.236	0.240	0.244	theta	0°	*	10°	0°	*	10°
D1	5.25	5.35	5.60	0.207	0.211	0.220	theta1	5°	*	9°	5°	*	9°
e	2.286BSC			0.090BSC									

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

Kwansemi Semiconductor Co.,Ltd

Email:Sales@kwansemi.com

Web:www.kwansemi.com

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