

Features

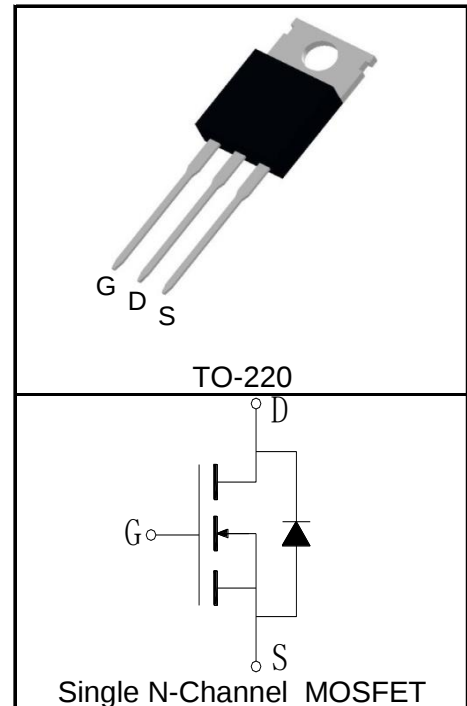
- 60V/125A,
 $R_{DS(ON)} = 3.6m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 5m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested

Applications

- DC-DC Converters and Off-line UPS
- Synchronous Rectification



Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		60	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	125	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	500	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	125	A
		T _C =100°C	88	
P _D	Maximum Power Dissipation	T _C =25°C	107	W
		T _C =100°C	53	
R _{θJC}	Thermal Resistance-Junction to Case		1.4	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		64	mJ

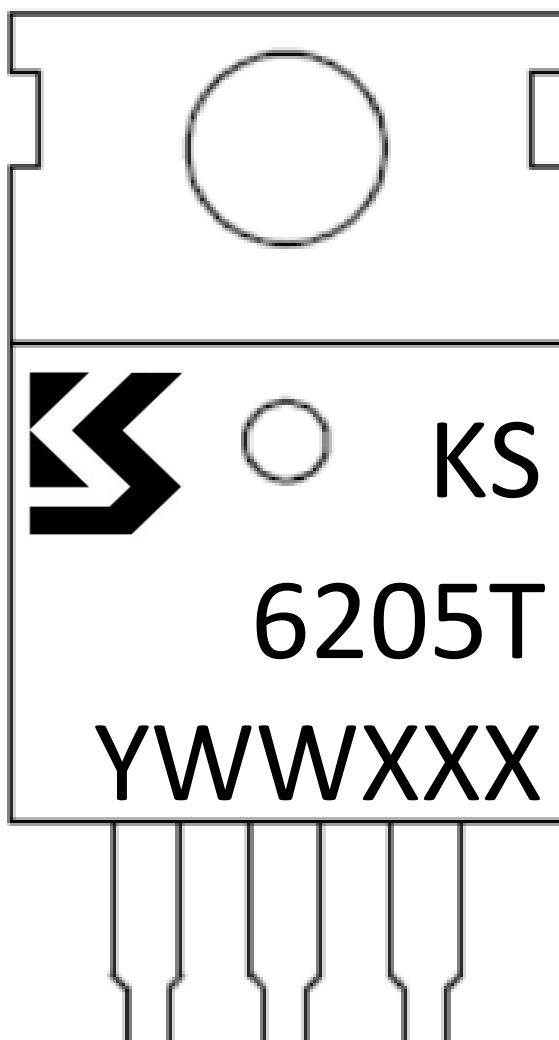
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS6205CAT			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	1.8	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} =20A		3.6	4.2	mΩ
		V _{GS} =4.5V, I _{DS} =16A		5	5.8	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V		0.83	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		45		ns
Q _{rr}	Reverse Recovery Charge			58		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V, Frequency=1.0MHz		1650		pF
C _{oss}	Output Capacitance			515		
C _{rss}	Reverse Transfer Capacitance			20		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, I _{DS} =20A, V _{GEN} =10V, R _G =3Ω		12		ns
t _r	Turn-on Rise Time			18		
t _{d(OFF)}	Turn-off Delay Time			21		
t _f	Turn-off Fall Time			10		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _{DS} =20A		30		nC
Q _{gs}	Gate-Source Charge			10.2		
Q _{gd}	Gate-Drain Charge			6.5		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 75A.
 - 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} , $I_{AS}=16A$, $L=0.5mH$, $V_{DD}=30V$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$, 100% tested and guaranteed.
 - 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
KS6205CAT	TO-220	Tube	50	-	-

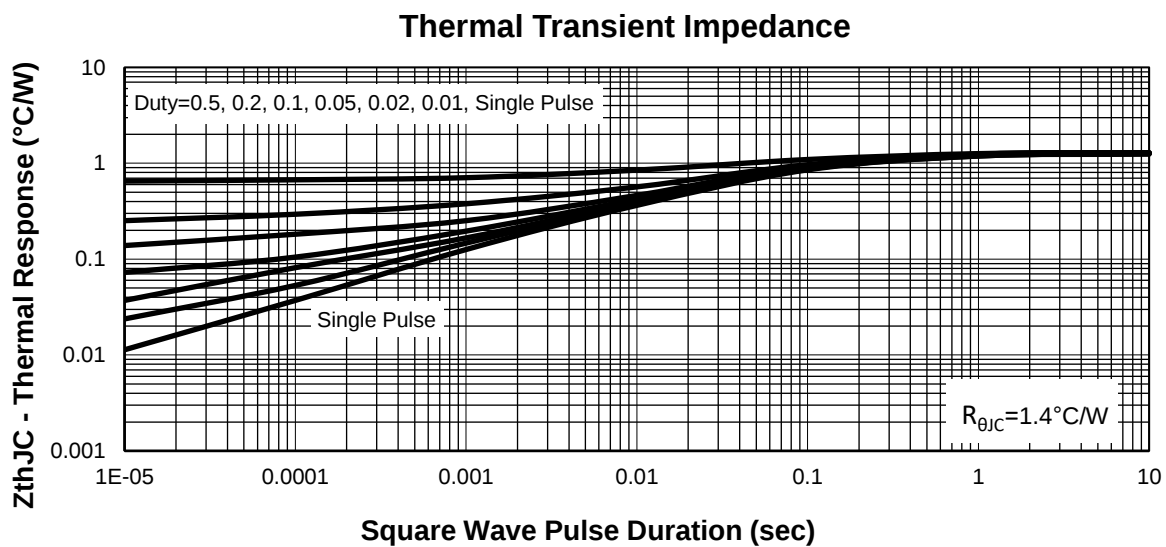
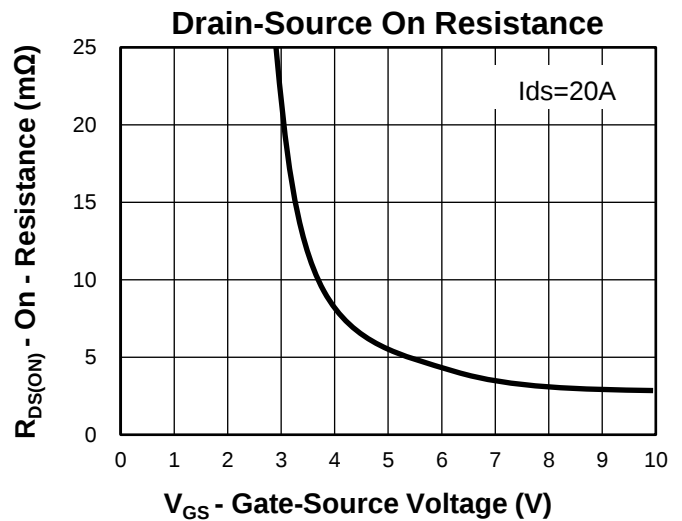
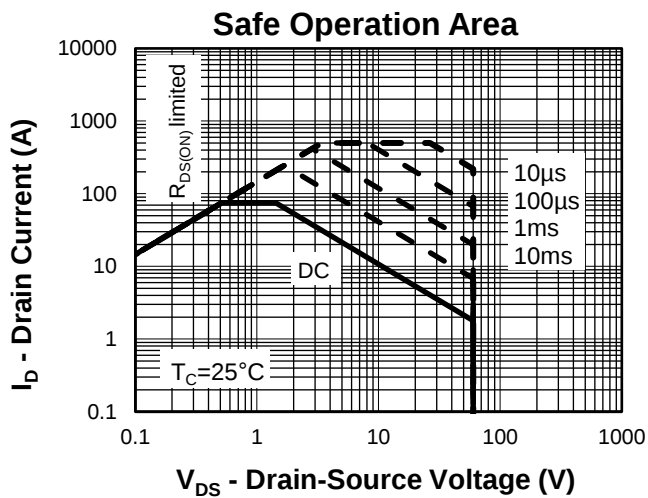
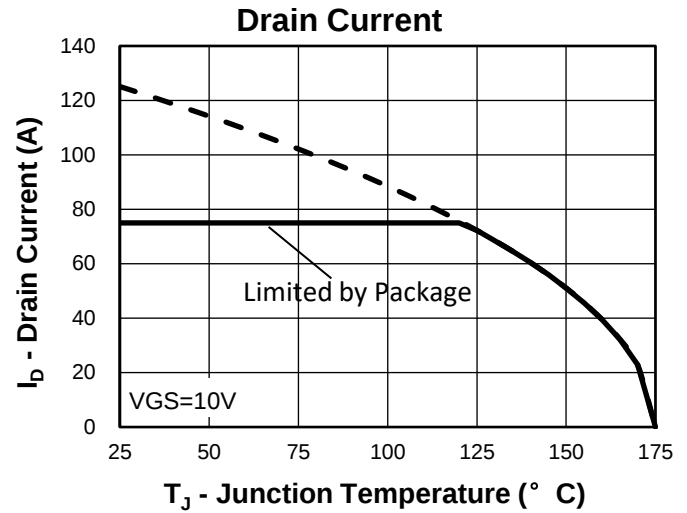
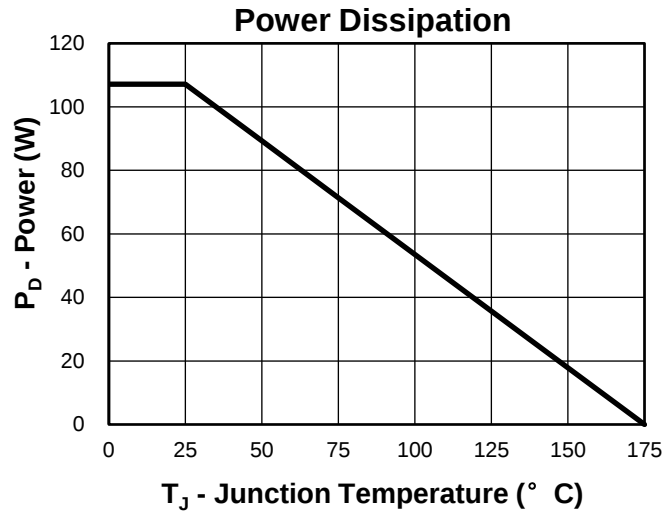


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

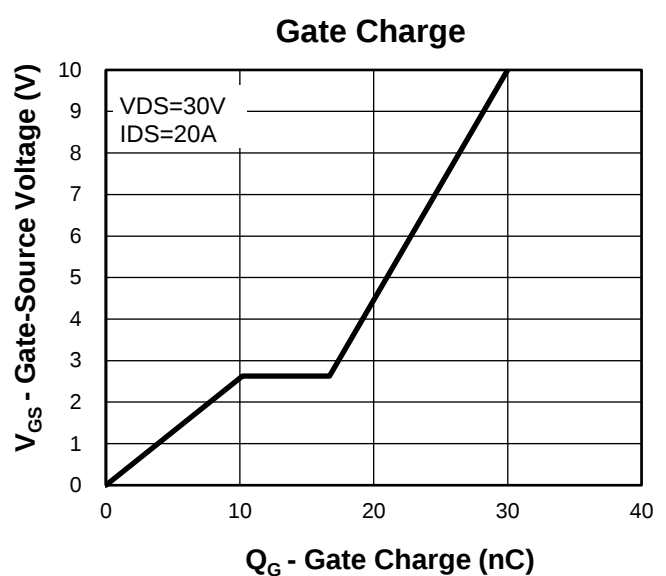
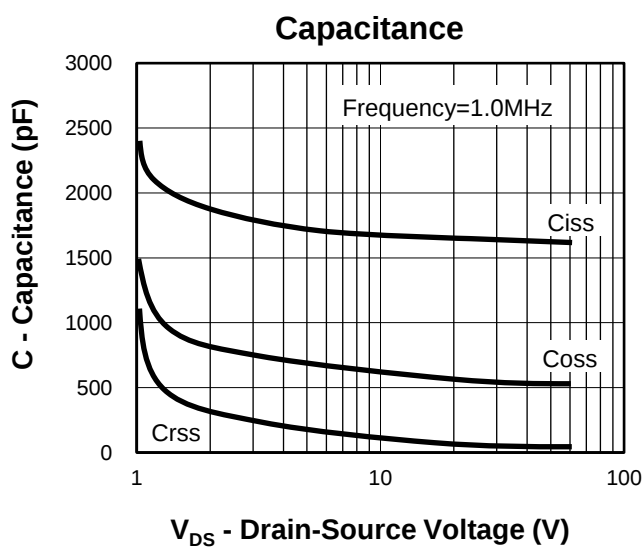
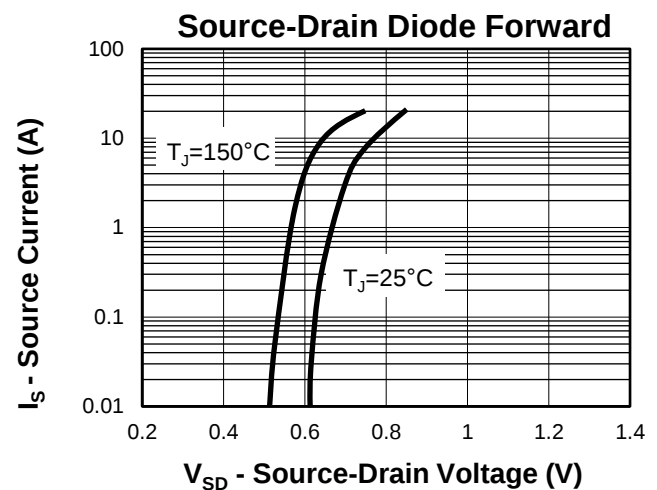
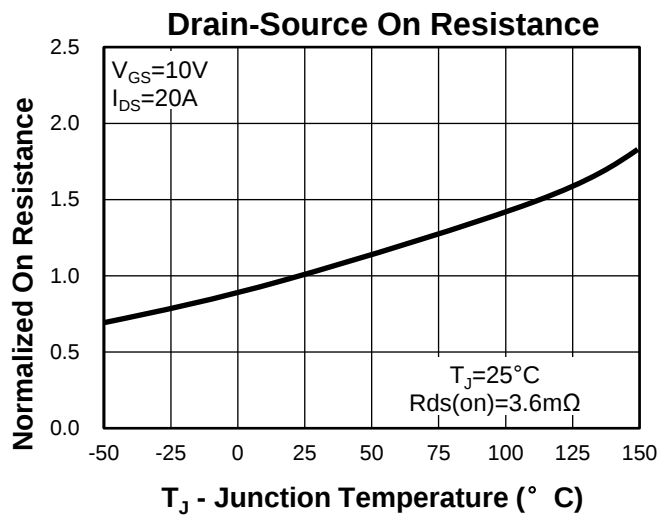
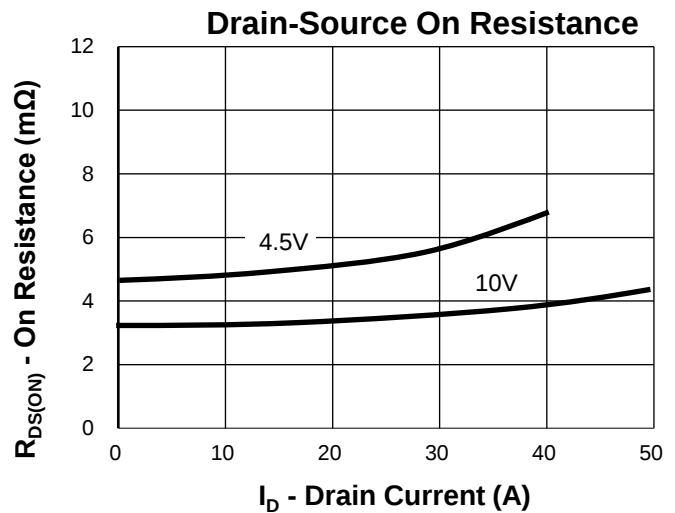
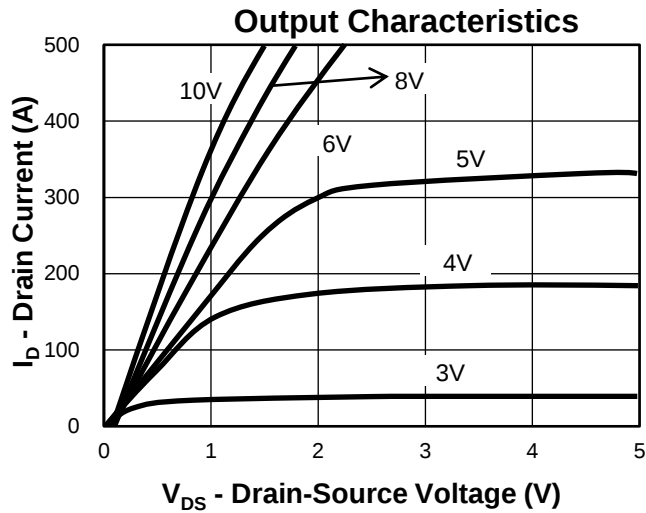
2nd Line: Part Number(6205T)

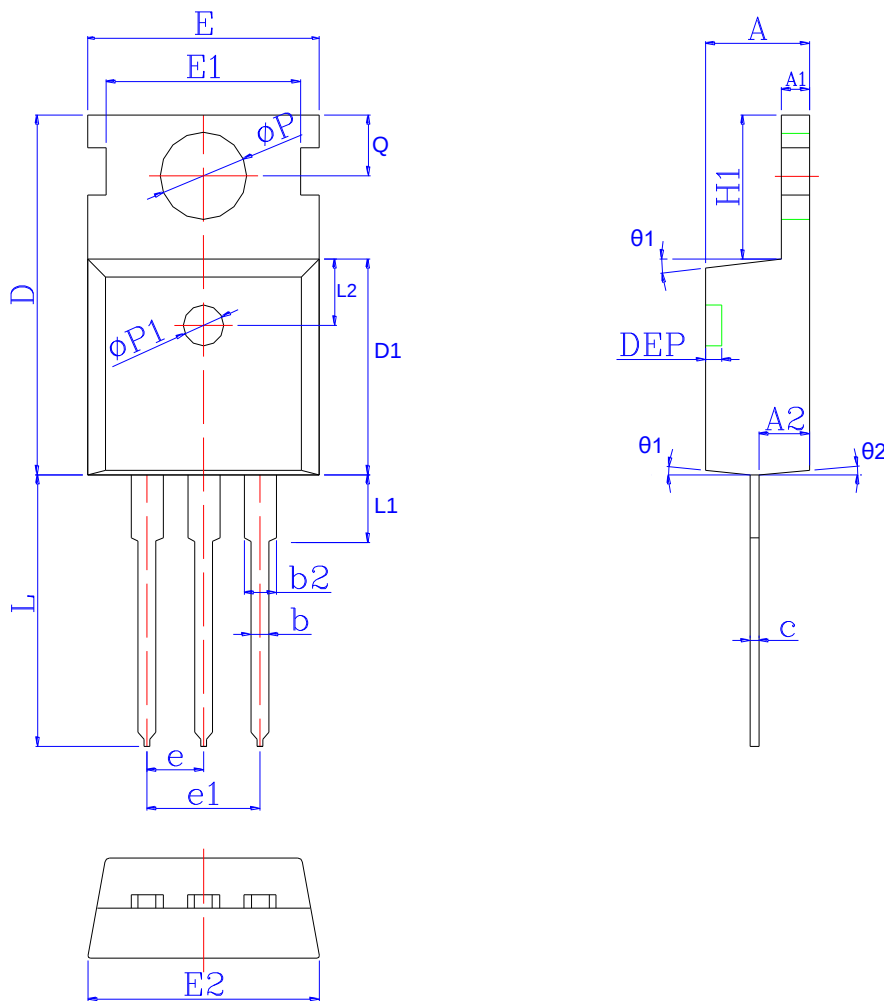
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



Typical Characteristics



Package Information
TO-220


SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.54	4.77	0.169	0.179	0.188	Φp1	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.15	1.30	1.40	0.045	0.051	0.055	e	2.54 BSC			0.10 BSC		
A2	1.90	2.25	2.60	0.075	0.089	0.102	e1	5.08 BSC			0.20 BSC		
b	0.60	0.80	1.00	0.024	0.031	0.039	H1	6.30	6.50	6.80	0.248	0.256	0.268
b2	1.17	1.28	1.72	0.046	0.050	0.068	L	12.70	13.18	13.65	0.500	0.519	0.537
c	0.40	0.50	0.60	0.016	0.020	0.024	L1	*	*	3.95	*	*	0.156
D	15.40	15.70	16.00	0.606	0.618	0.630	L2	2.50 REF			0.098 REF		
D1	8.96	9.21	9.46	0.353	0.363	0.372	Φp	3.50	3.60	3.75	0.138	0.142	0.148
DEP	*	*	0.30	*	*	0.012	Q	2.70	2.80	3.20	0.106	0.110	0.126
E	9.66	9.97	10.28	0.380	0.393	0.405	θ 1	5°	7°	9°	5°	7°	9°
E1	*	8.70	*	*	0.343	*	θ 2	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.402							

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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