

Features

- 60V/170A,
 $R_{DS(on)} = 2.9m\Omega(Typ.)@V_{GS}=10V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- 100% Avalanche Tested

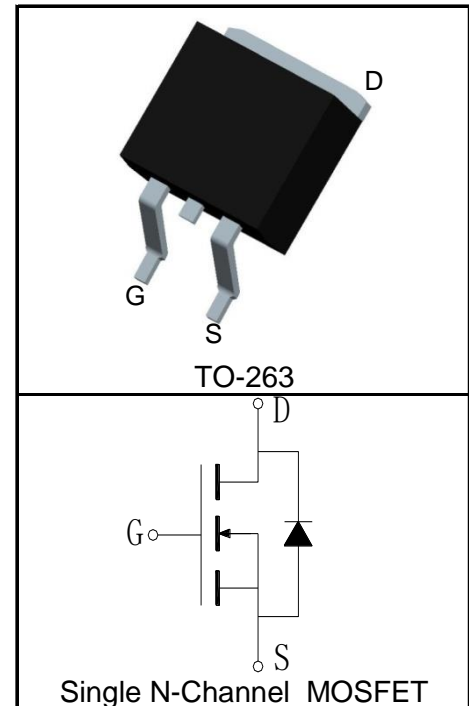
Applications

- DC-DC Converters
- Power Supply



Halogen-Free

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_J	Maximum Junction Temperature	175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 170	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 680	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_C=25^\circ\text{C}$ 170	A
		$T_C=100^\circ\text{C}$ 120	
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 150	W
		$T_C=100^\circ\text{C}$ 75	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	225	mJ

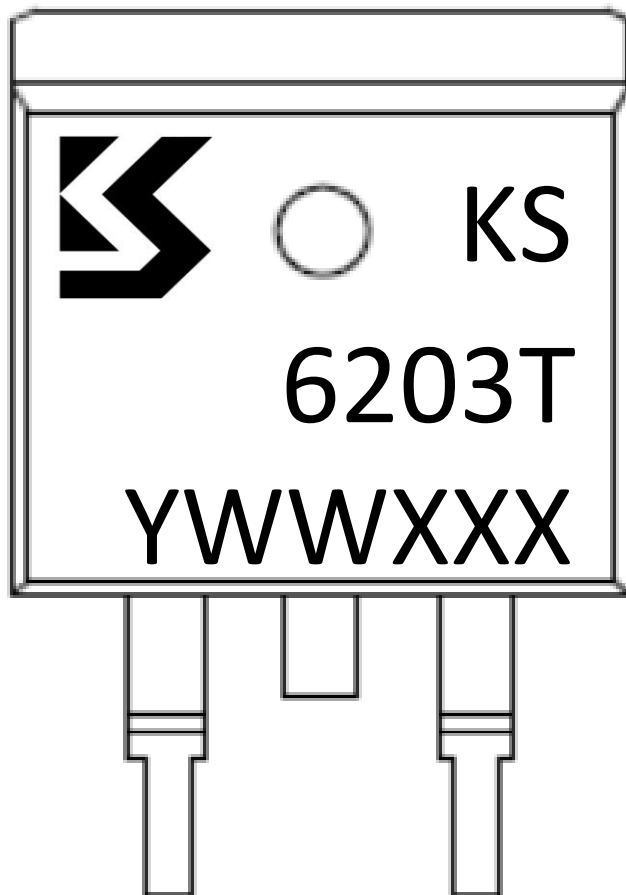
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS6203GAT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1	μA
		$T_J=125^\circ\text{C}$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=30A$		2.9	3.8	m Ω
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=30A, V_{GS}=0V$		0.83	1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=30A, dI_{SD}/dt=100A/\mu s$		29		ns
Q_{rr}	Reverse Recovery Charge			38		nC
Dynamic Characteristics⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.2		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=30V,$ Frequency=1.0MHz		2075		pF
C_{oss}	Output Capacitance			1020		
C_{riss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=30V, I_{DS}=30A,$ $V_{GEN}=10V, R_G=2.5\Omega$		9		ns
t_r	Turn-on Rise Time			21		
$t_{d(OFF)}$	Turn-off Delay Time			27		
t_f	Turn-off Fall Time			8		
Gate Charge Characteristics⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=30V, V_{GS}=10V,$ $I_{DS}=30A$		43		nC
Q_{gs}	Gate-Source Charge			7		
Q_{gd}	Gate-Drain Charge			10		

- 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 $T_{Jmax}, I_{AS} = 30A, L=0.5\text{mH}, V_{DD} = 48V, R_G = 25\Omega$, 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.

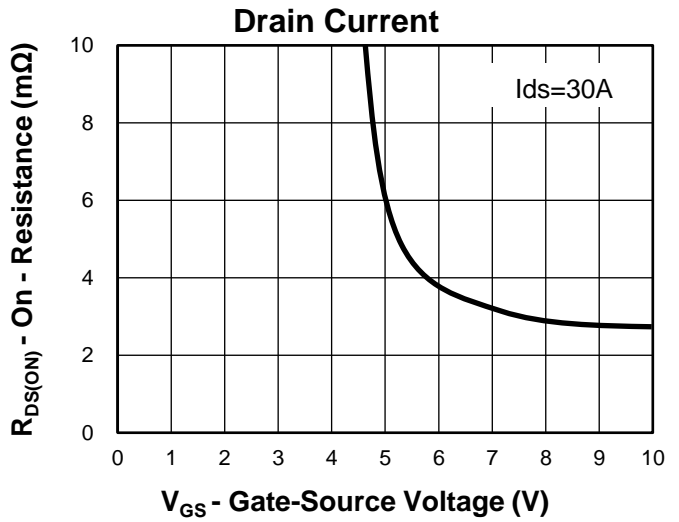
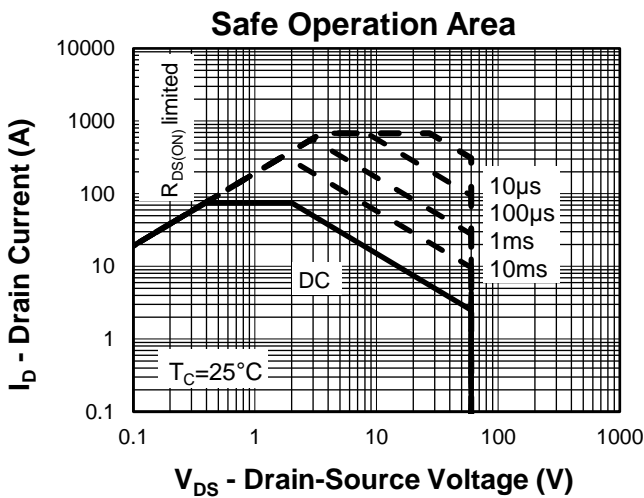
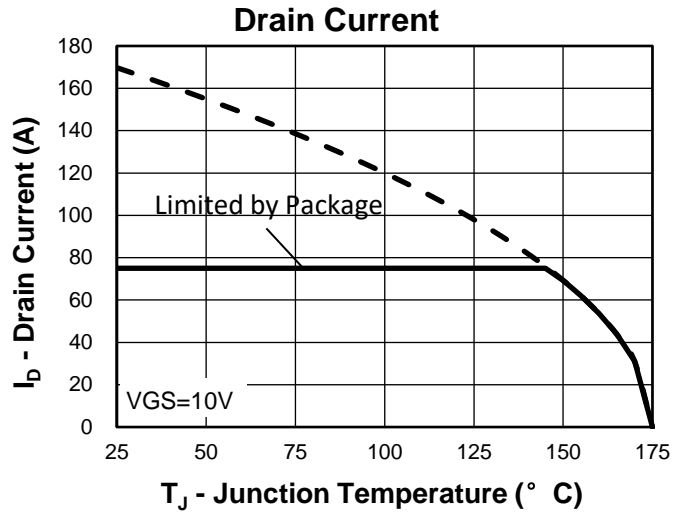
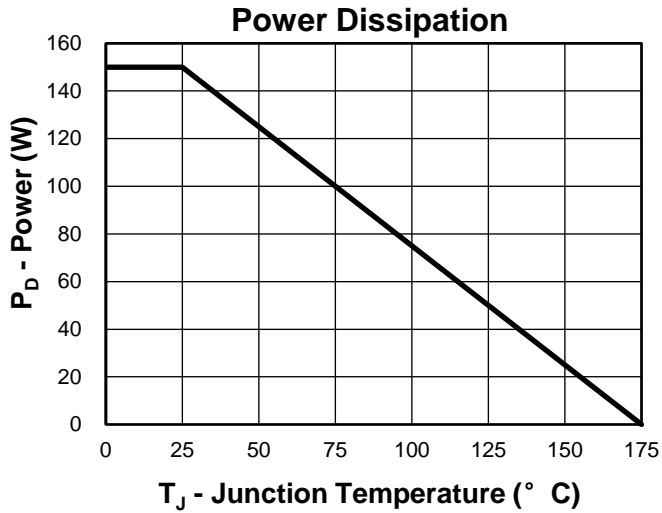
Ordering and Marking Information

Device	Package	Packaging	Quantity	Reel Size	Tape width
KS6203GAT	TO-263	Tape&Reel	800	13"	24mm

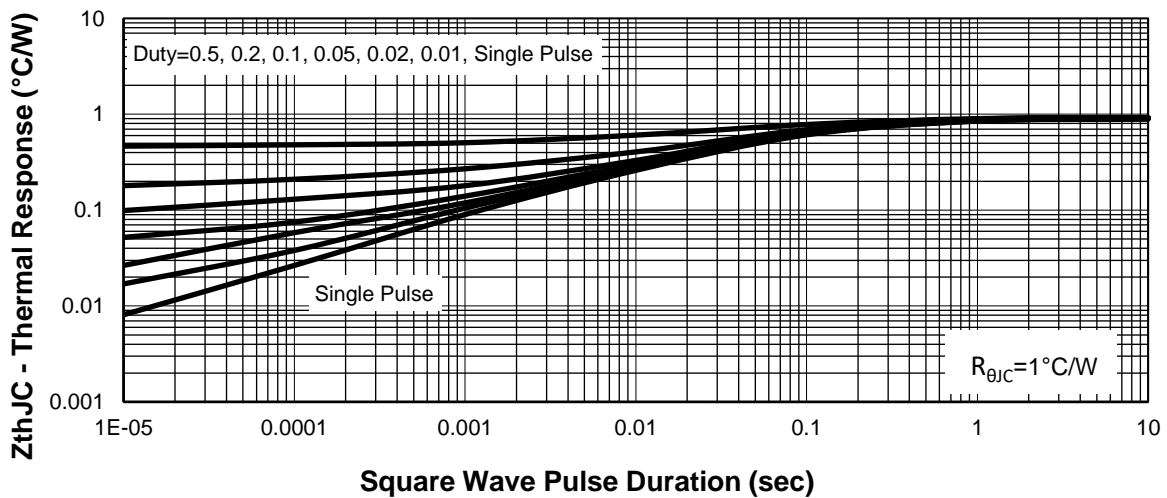


Y =Year,2017-A,2018-B,etc.
WW =Week.
XXX =Lot number.

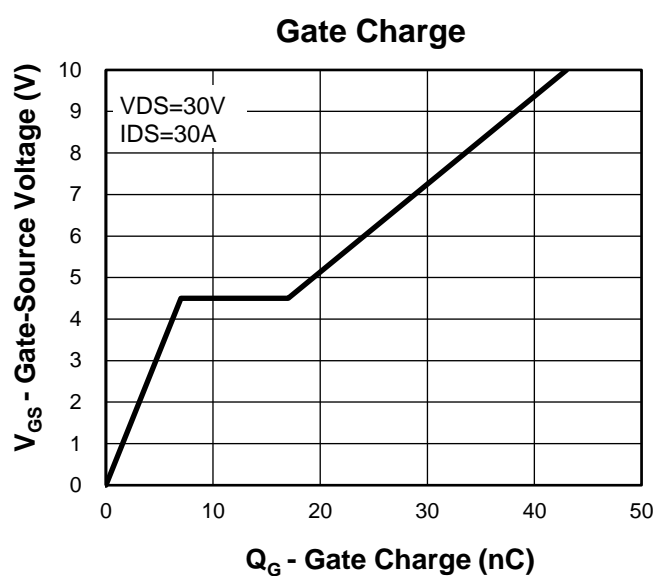
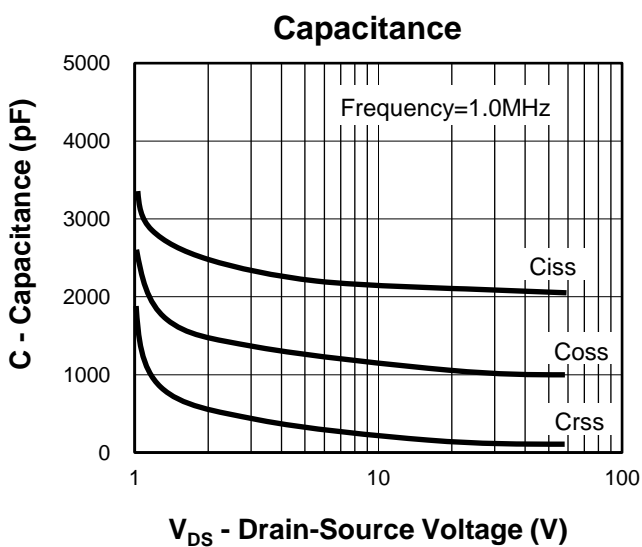
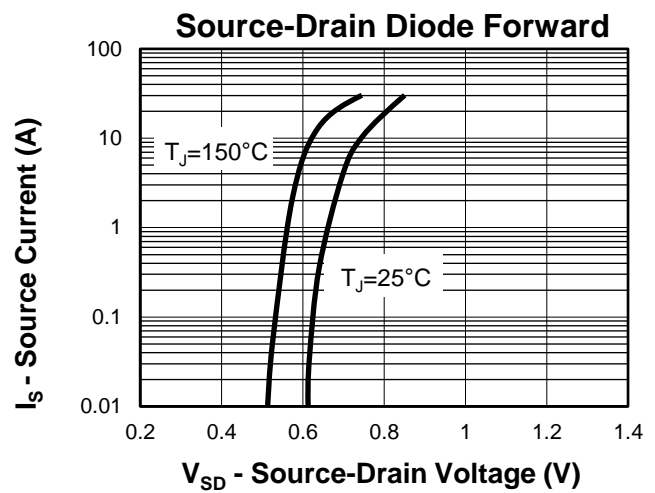
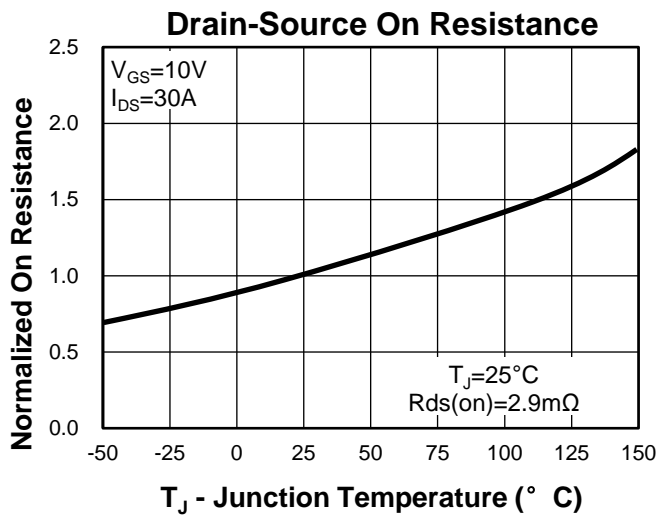
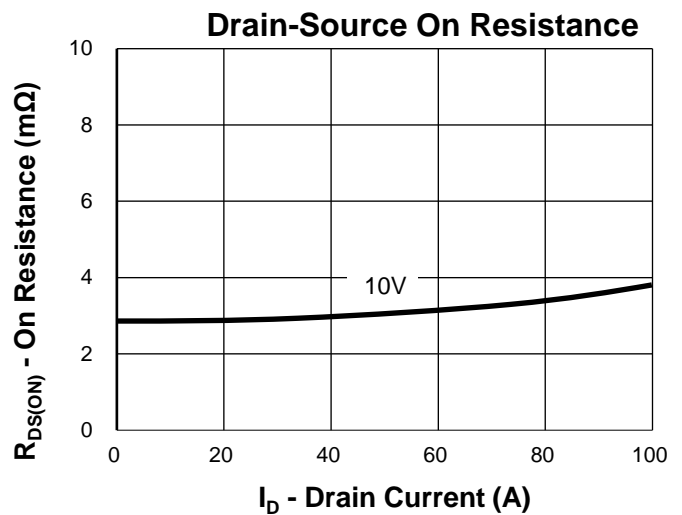
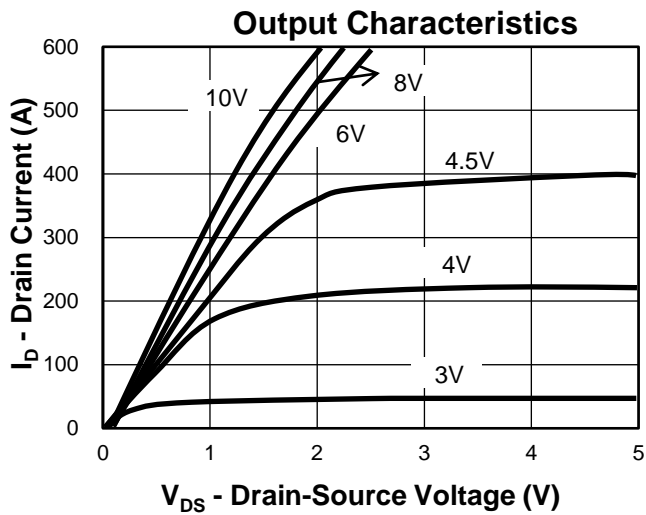
Typical Characteristics



Thermal Transient Impedance



Typical Characteristics



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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