

### Features

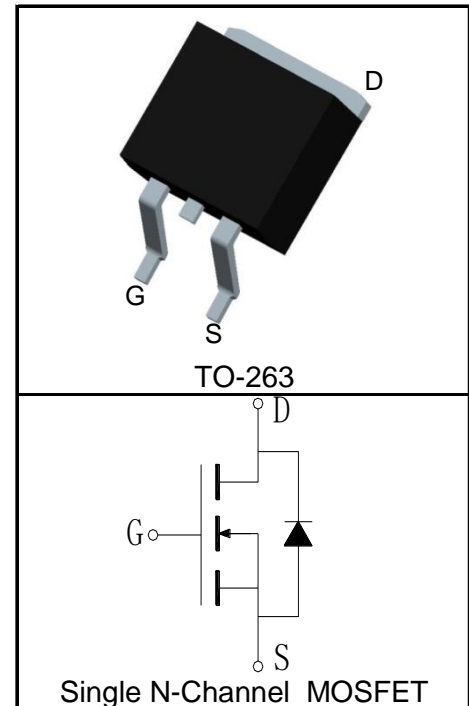
- 100V/180A,  
 $R_{DS(ON)} = 3m\Omega(Typ.)@V_{GS}=10V$   
 $R_{DS(ON)} = 4m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent  $Q_G \times R_{DS(on)}$  product(FOM)
- SGT Technology
- 100% Avalanche Tested

### Applications

- High Frequency Switching and Synchronous Rectification



### Pin Description



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
<b>Common Ratings</b> ( $T_C=25^\circ\text{C}$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	100	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$T_J$	Maximum Junction Temperature	175	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$I_S$	Diode Continuous Forward Current	$T_C=25^\circ\text{C}$ 180	A
<b>Mounted on Large Heat Sink</b>			
$I_{DP}^{(1)}$	300 $\mu\text{s}$ Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 720	A
$I_D^{(2)}$	Continuous Drain Current( $V_{GS}=10V$ )	$T_C=25^\circ\text{C}$ 180	A
		$T_C=100^\circ\text{C}$ 127	
$P_D$	Maximum Power Dissipation	$T_C=25^\circ\text{C}$ 242	W
		$T_C=100^\circ\text{C}$ 121	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.62	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C}/\text{W}$
<b>Drain-Source Avalanche Ratings</b>			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	462	mJ

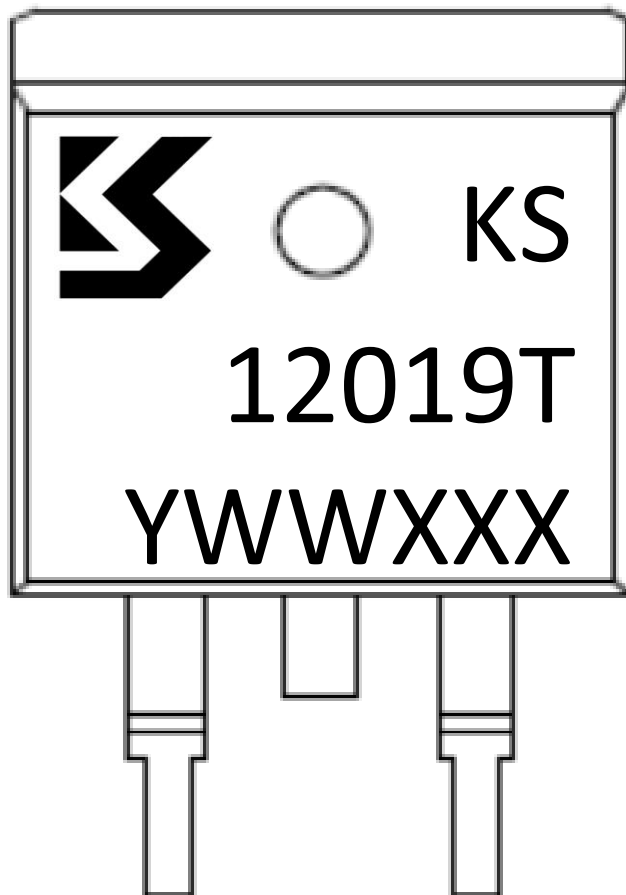
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS12019GAT			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	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	$\mu A$
		$T_J=125^\circ\text{C}$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.1	1.6	2.3	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=40A$		3	4.5	$m\Omega$
		$V_{GS}=4.5V, I_{DS}=20A$		4	6.2	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=40A, V_{GS}=0V$		0.84	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=40A, di_{SD}/dt=100A/\mu s$		44		ns
$Q_{rr}$	Reverse Recovery Charge			83		nC
<b>Dynamic Characteristics<sup>(6)</sup></b>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.5		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Frequency=1.0MHz		4300		pF
$C_{oss}$	Output Capacitance			1285		
$C_{rss}$	Reverse Transfer Capacitance			35		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=50V, I_{DS}=40A,$ $V_{GEN}=10V, R_G=3\Omega$		19		ns
$t_r$	Turn-on Rise Time			32		
$t_{d(OFF)}$	Turn-off Delay Time			48		
$t_f$	Turn-off Fall Time			21		
<b>Gate Charge Characteristics<sup>(6)</sup></b>						
$Q_g$	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V,$ $I_{DS}=40A$		58		nC
$Q_{gs}$	Gate-Source Charge			15		
$Q_{gd}$	Gate-Drain Charge			13		

- 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  $T_{Jmax}$ ,  $I_{AS}=43A$ ,  $L=0.5\text{mH}$ ,  $V_{DD}=48V$ ,  $R_G=25\Omega$ , 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
KS12019GAT	TO-263	Tape&Reel	800	13"	24mm

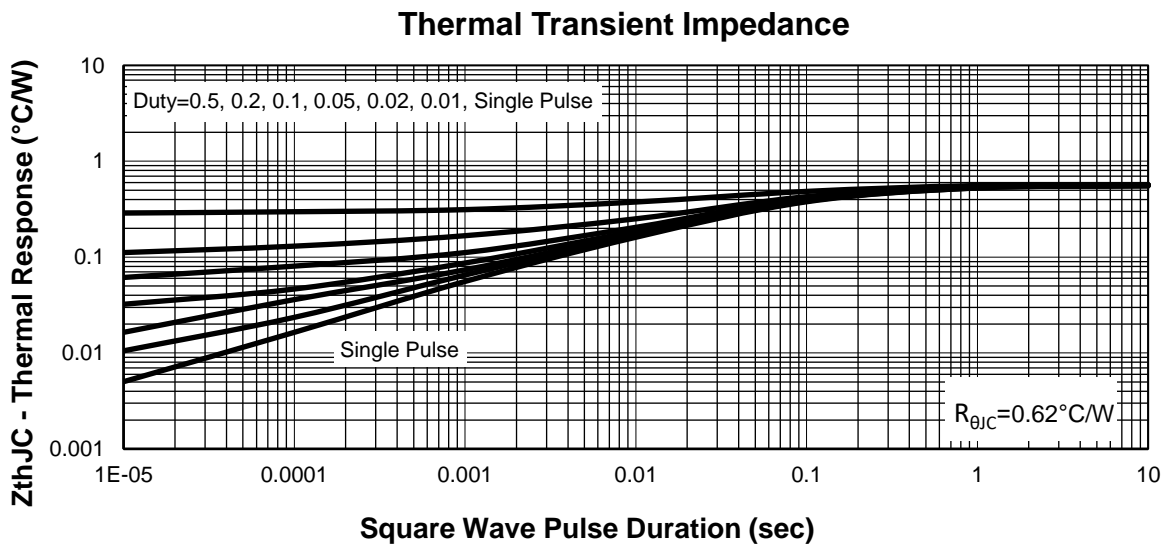
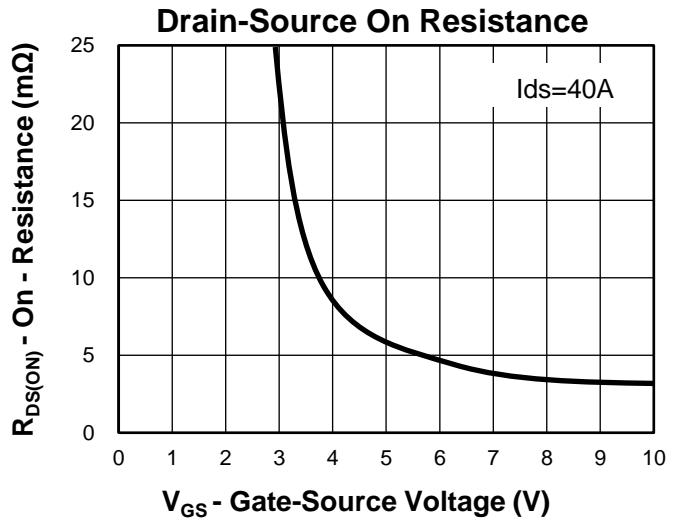
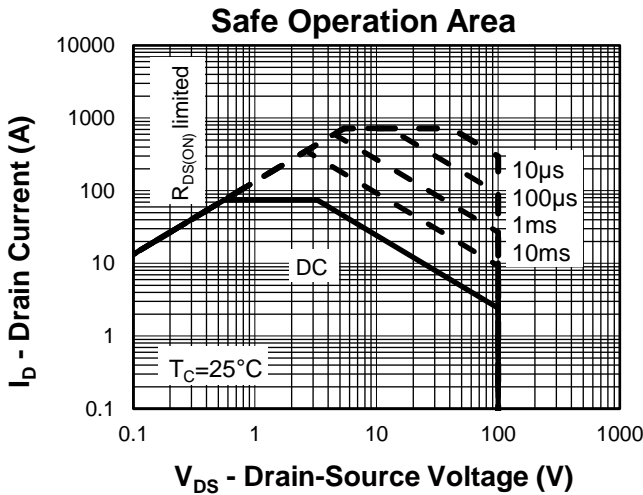
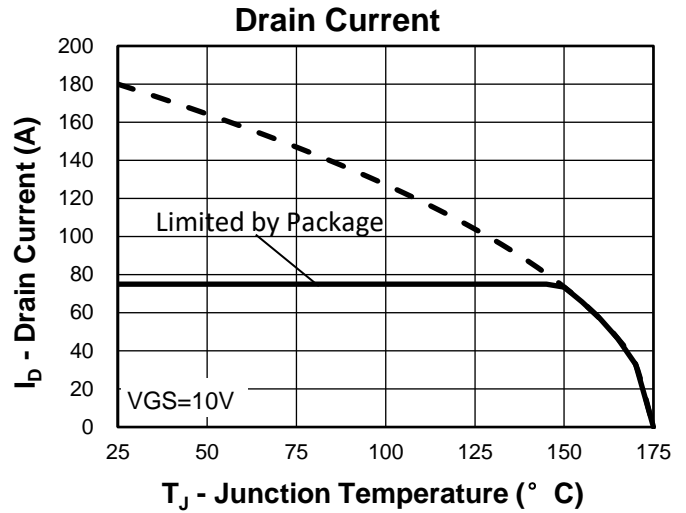
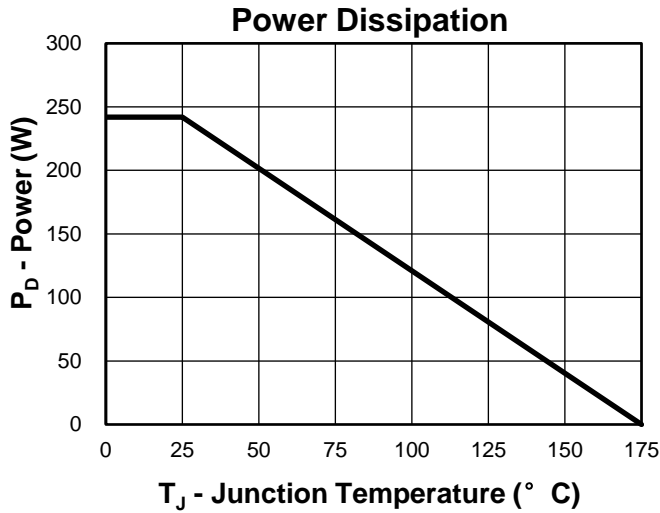


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

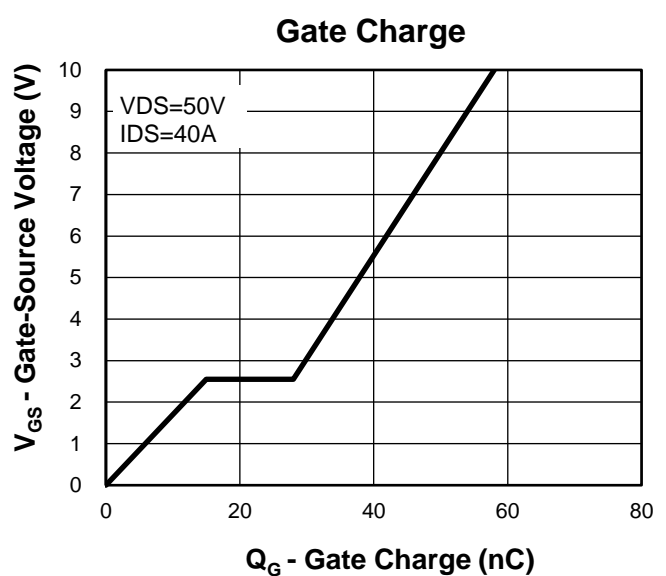
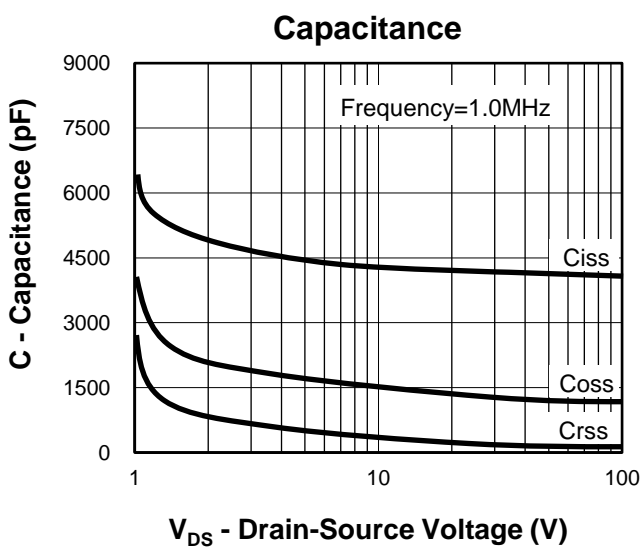
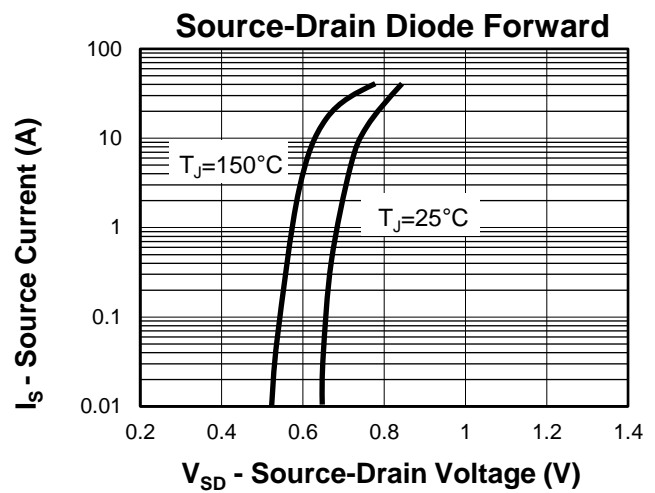
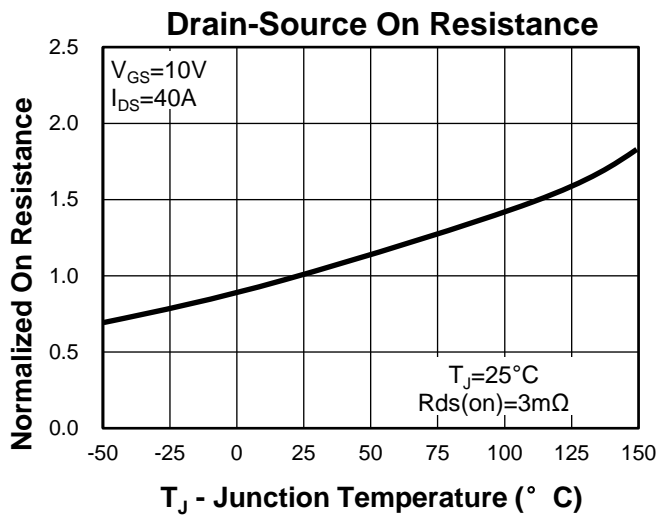
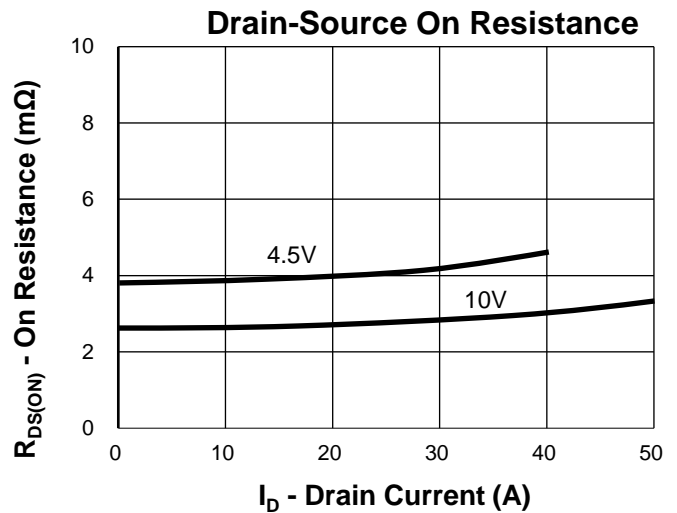
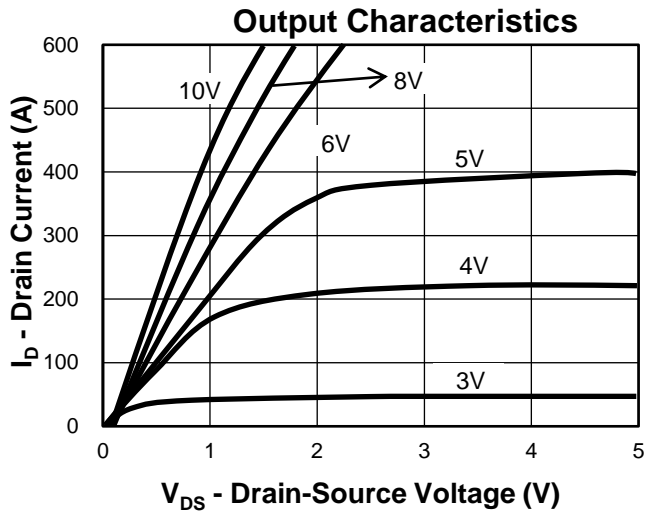
2nd Line: Part Number(12019T)

3rd Line: Lot Number(YWWXXX)

Typical Characteristics

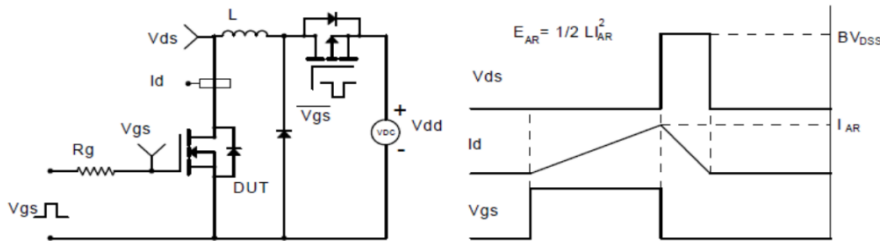


### Typical Characteristics





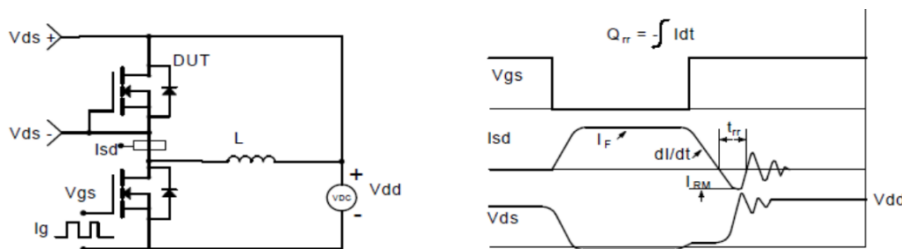
### Avalanche Test Circuit and Waveforms



### Switching Time Test Circuit and Waveforms



### Diode Recovery Test Circuit and Waveforms



### Gate Charge Test Circuit and Waveform



### Customer Service

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