



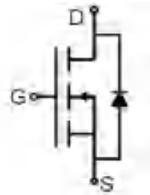
Features

- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handling capability
- Lead free product is acquired

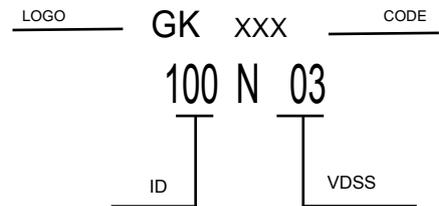
V_{DS} 30 V
 I_D 100 A
 $R_{DS(ON)}$ 3.5m Ω

Application

- Load switch
- PWM applications
- Power management



Schematic Diagram



TO-252

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	30	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
I_D	Drain Current-Continuous($T_C=25^\circ C$)	100	A
	Drain Current-Continuous($T_C=100^\circ C$)	57	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	360	A
P_D	Maximum Power Dissipation($T_C=25^\circ C$)	61	W
	Maximum Power Dissipation($T_C=100^\circ C$)	24	W
E_{AS}	Avalanche energy (Note 2)	169	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ C$

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		2.06	$^\circ C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^{\circ}\text{C}$			1	μA
		$V_{DS}=30V, V_{GS}=0V, T_J=125^{\circ}\text{C}$			100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.5	V
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=20A$		34		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=20A, T_J=25^{\circ}\text{C}$		3.5	4.2	m Ω
		$V_{GS}=4.5V, I_D=20A, T_J=25^{\circ}\text{C}$		4.5	5.5	m Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1.0\text{MHz}$		1944		pF
C_{oss}	Output Capacitance			236		pF
C_{rss}	Reverse Transfer Capacitance			204		pF
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0\text{MHz}$		1.9		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=15V, R_L=0.75\Omega, R_{GEN}=3\Omega$		7.8		nS
t_r	Turn-on Rise Time			7.4		nS
$t_{d(off)}$	Turn-Off Delay Time			39.4		nS
t_f	Turn-Off Fall Time			11.2		nS
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V, I_D=20A$		42.4		nC
Q_{gs}	Gate-Source Charge			5		nC
Q_{gd}	Gate-Drain Charge			9.6		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				100	A
V_{SD}	Forward on Voltage (Note 3)	$V_{GS}=0V, I_S=20A$			1.2	V
t_{rr}	Reverse Recovery Time	$I_F=20A, dI/dt=100A/\mu s$		19.2		ns
Q_{rr}	Reverse Recovery Charge	$I_F=20A, dI/dt=100A/\mu s$		9.6		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2. E_{AS} condition: $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_G=10V, R_g=25\Omega, L=0.5\text{mH}$.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.



RATING AND CHARACTERISTIC CURVES

Figure 1. Output Characteristics

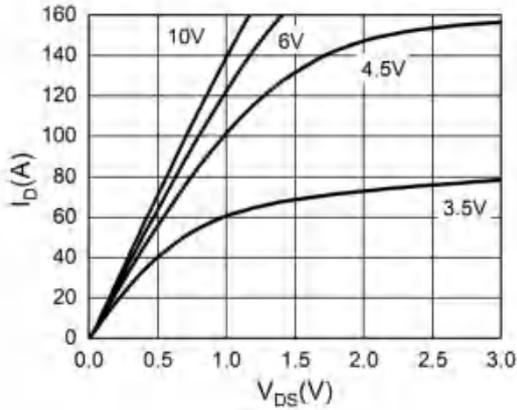


Figure 2. Transfer Characteristics

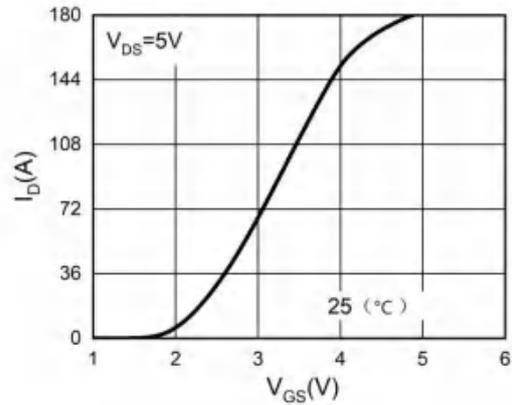


Figure 3. Power Dissipation

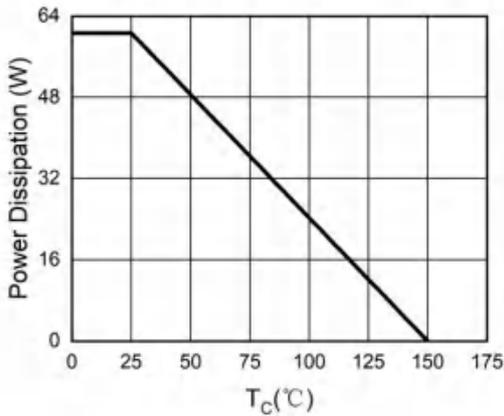


Figure 4. Drain Current

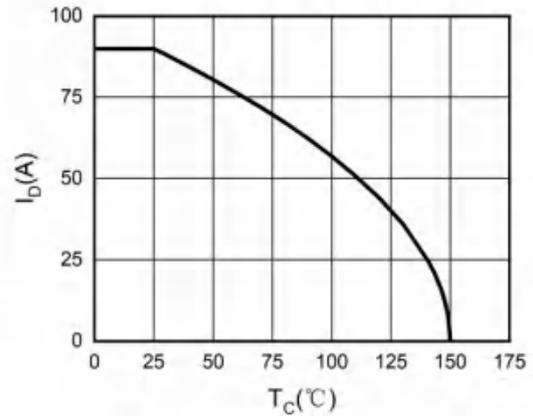


Figure 5. BV_{DSS} vs Junction Temperature

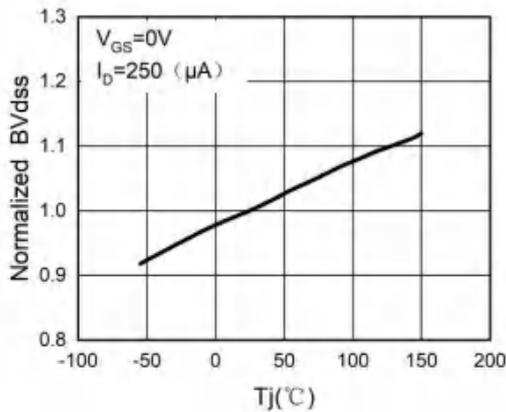
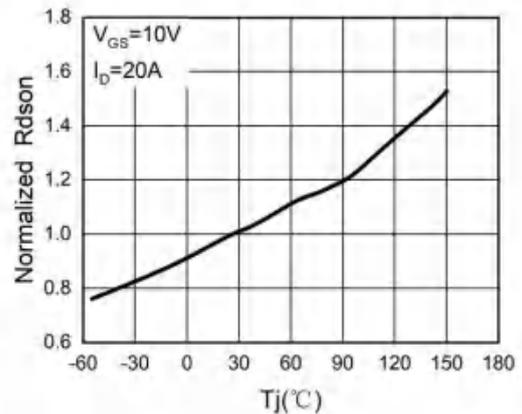


Figure 6. $R_{DS(ON)}$ vs Junction Temperature





RATING AND CHARACTERISTIC CURVES

Figure 7. Gate Charge Waveforms

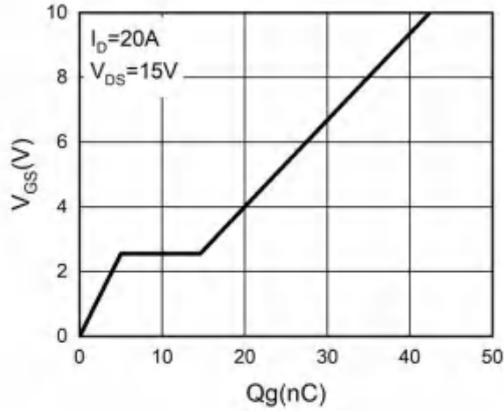


Figure 8. Capacitance

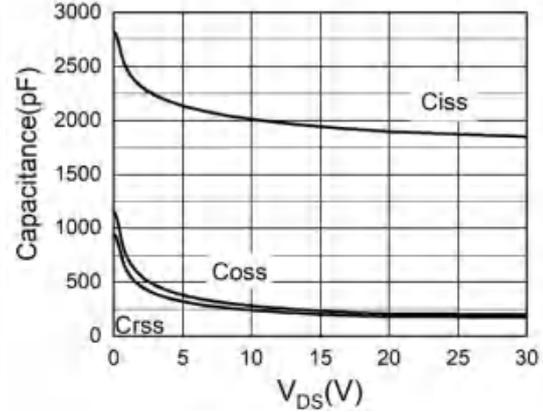


Figure 9. Body-Diode Characteristics

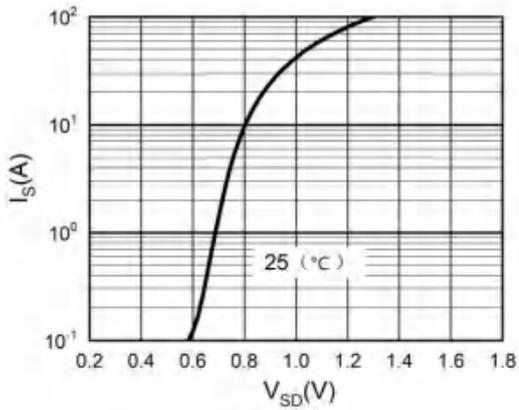
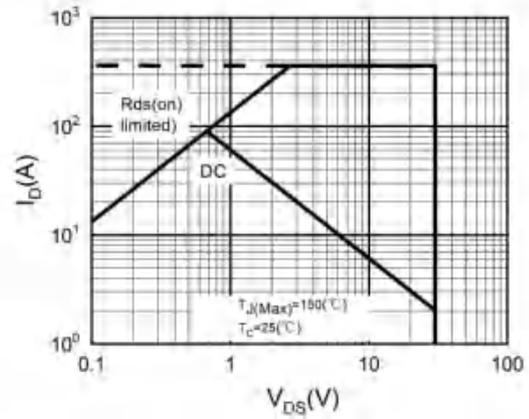
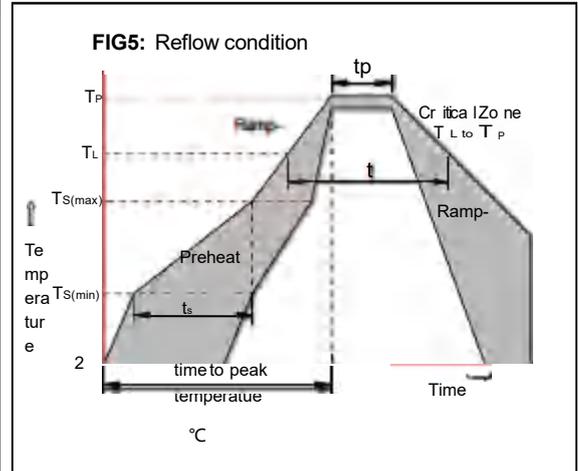


Figure 10. Maximum Safe Operating Area



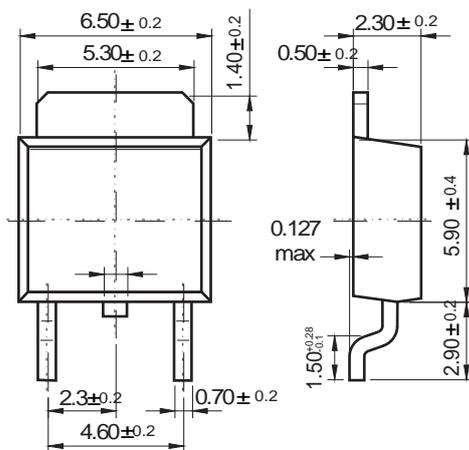
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C

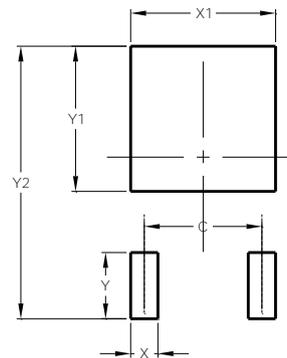


Package Dimensions & Suggested Pad Layout

TO-252



Dimensions in inches and (millimeters)



Dimensions	Value (in mm)
C	4.55
X	1.50
X1	5.80
Y	2.70
Y1	6.00
Y2	10.90

Tape & reel specification

Tape		Symbol	Dimension (mm)		
		P0	4.00±0.20		
		P1	8.00±0.20		
		P2	2.00±0.20		
		D0	1.55±0.15		
		D1	1.55±0.20		
		E	1.75±0.20		
		F	7.50±0.20		
		W	16.00±0.20		
		A0	7.10±0.20		
		B0	10.50±0.20		
		K0	2.70±0.20		
		T	0.30±0.10		
		<p>13" Reel</p>		D2	330.0±5.0
				D3	100.0±4.0
				W1	20.0±5.0
W2	25.0±5.0				
		I	13.0±2.0		
		Quantity: 2500PCS			