V_{DSS}	30 V
I_D	120 A
$R_{DS(ON)}$	2.8mΩ

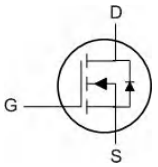
Features

- 30V,120A
  $R_{DS(ON)}$<5.5mΩ @ V_{GS} =10V
  $R_{DS(ON)}$<7.5mΩ @ V_{GS} =4.5V
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

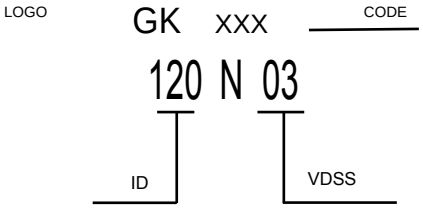
Applications

- Load Switch
- PWM Application
- Power management

Equivalent Circuit







TO-252



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	120	A
		T_C = 100℃	68	A
I_{DM}	Pulsed Drain Current note1		380	A
E_{AS}	Single Pulsed Avalanche Energy note2		256	mJ
P_D	Power Dissipation	T_C = 25℃	78	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.95	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_J=25℃unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =30A	-	2.8	5.5	mΩ
		V_{GS} =4.5V, I_D =20A	-	5.5	7.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} =0V, f = 1.0MHz	-	2760	-	pF
C_{oss}	Output Capacitance		-	398	-	pF
C_{rss}	Reverse Transfer Capacitance		-	360	-	pF
Q_g	Total Gate Charge	V_{DS} =15V, I_D =30A, V_{GS} =10V	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	7.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	11.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=15V, I_D=30A, R_{GEN}=3Ω, V_{GS} =10V	-	36	-	ns
t_r	Turn-on Rise Time		-	31	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	82	-	ns
t_f	Turn-off Fall Time		-	38	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	120	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	380	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=20A,dI/dt=100A/μs	-	28	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	21	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: T_J=25℃, V_{DD}=20V, V_G=10V, R_G=25Ω, L=0.5Mh, I_{AS}=32A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

RATING AND CHARACTERISTIC CURVES

Figure1: Output Characteristics

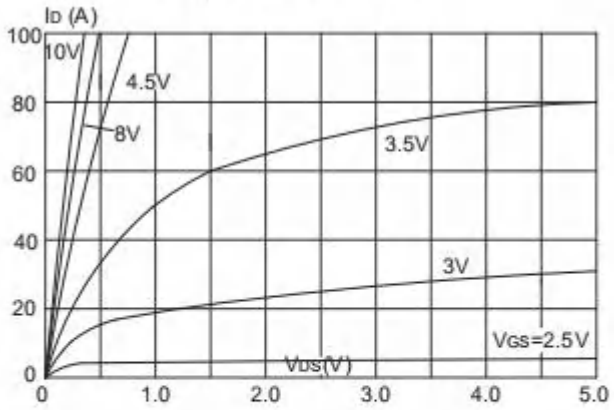


Figure 2: Typical Transfer Characteristics

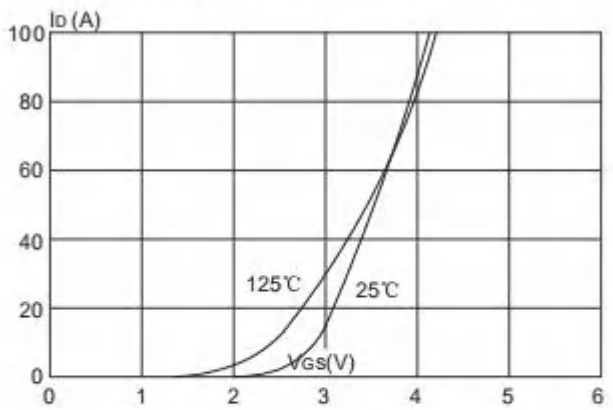


Figure 3: On-resistance vs. Drain Current

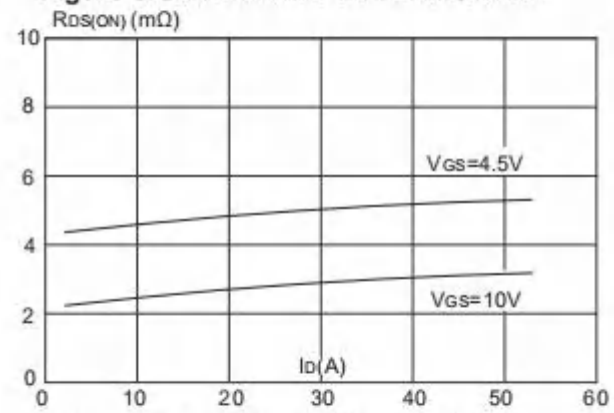


Figure 4: Body Diode Characteristics

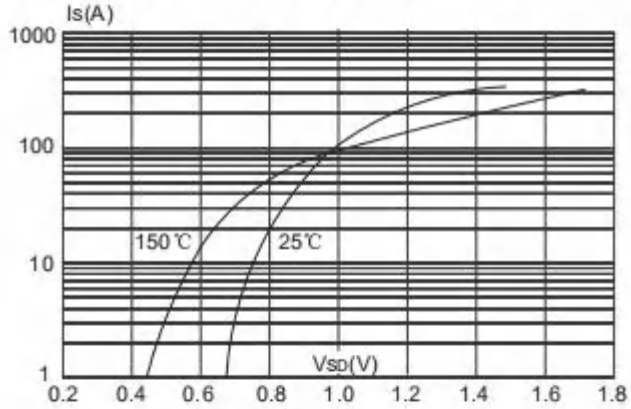


Figure 5: Gate Charge Characteristics

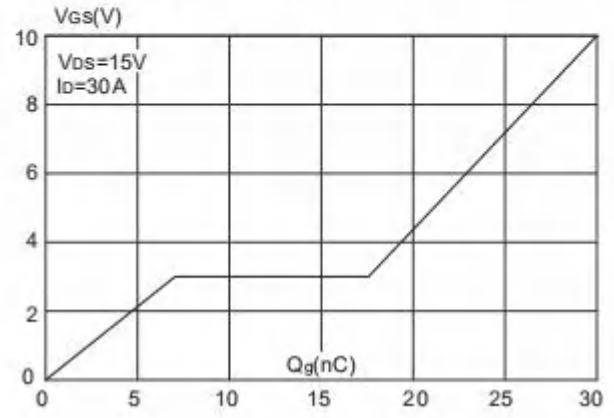


Figure 6: Capacitance Characteristics

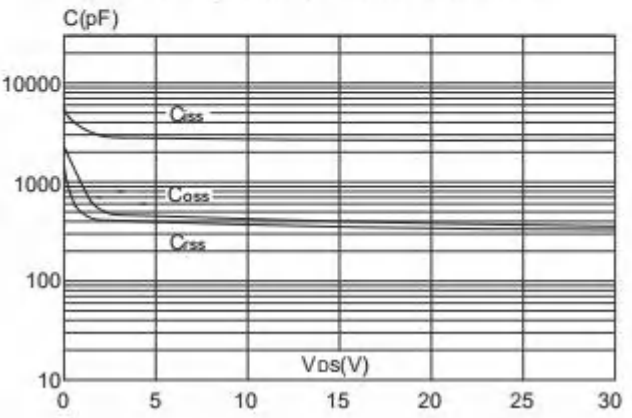
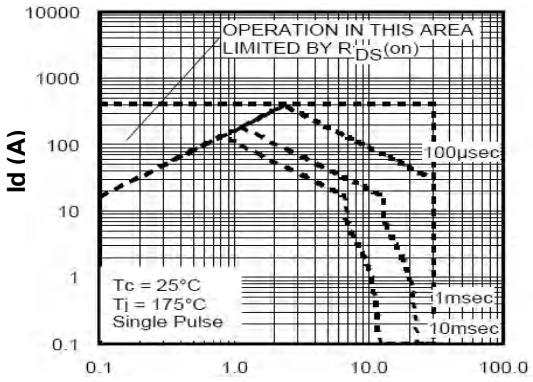


Figure 7. Maximum Safe Operating Area

Figure8. $R_{DS(ON)}$ vs Junction Temperature

RATING AND CHARACTERISTIC CURVES



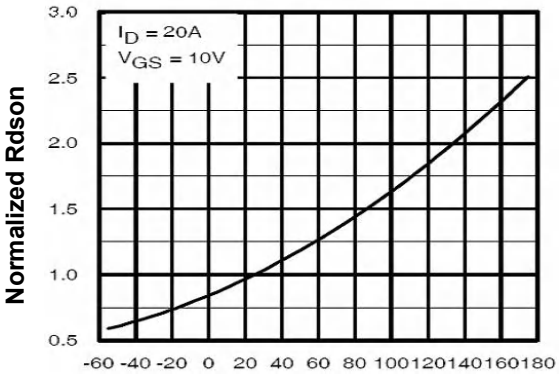


Figure 9. $V_{GS(th)}$ vs Junction Temperature

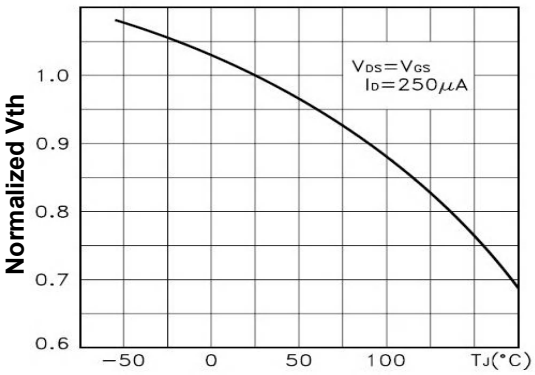
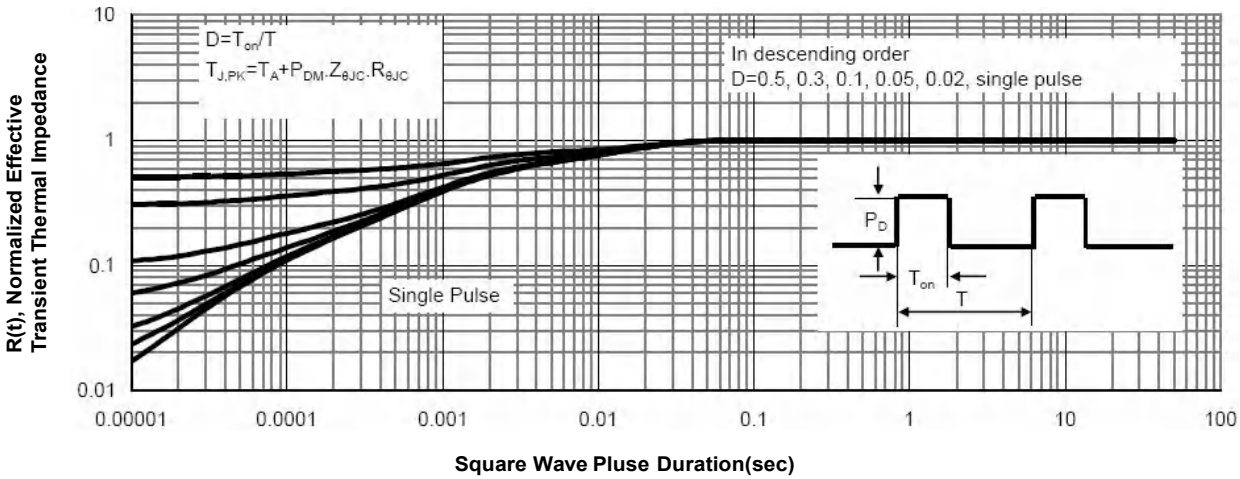


Figure 11. Normalized Maximum Transient Thermal Impedance



Test Circuit

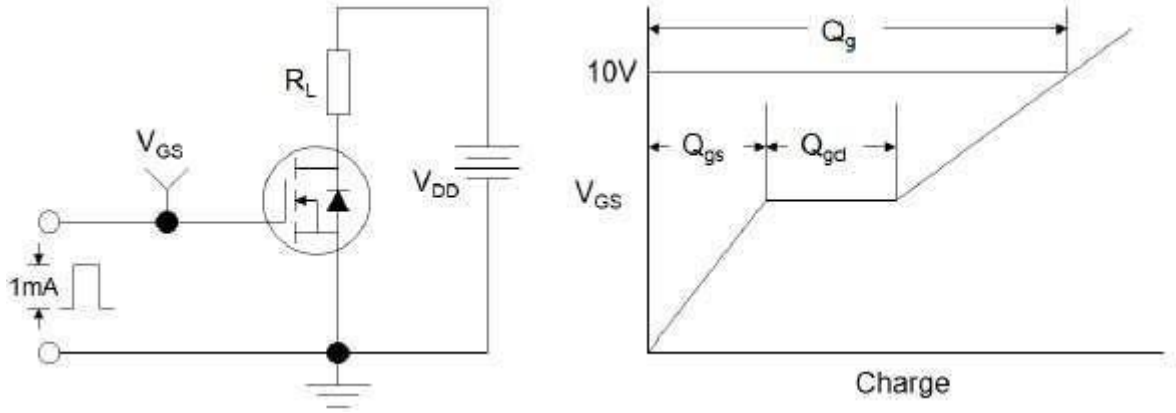


Figure1:Gate Charge Test Circuit & Waveform

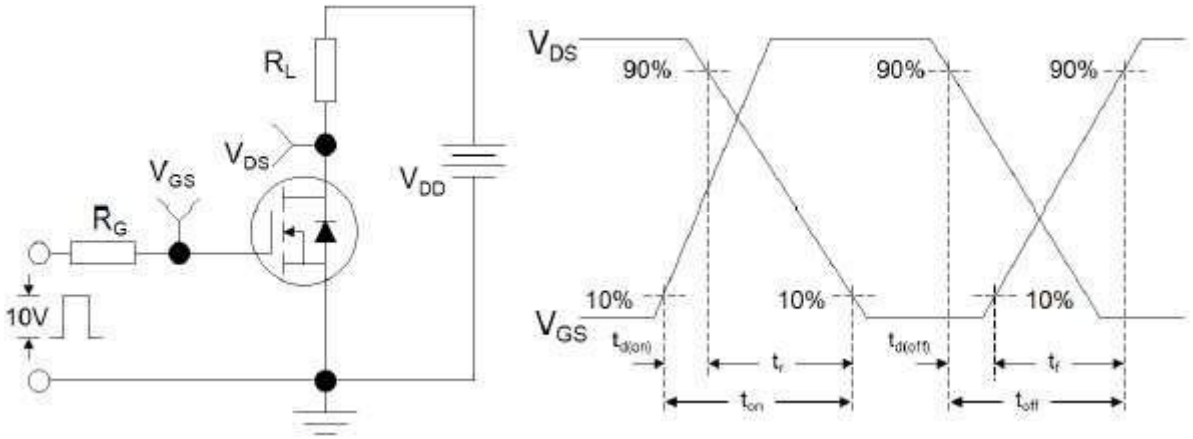


Figure 2: Resistive Switching Test Circuit & Waveforms

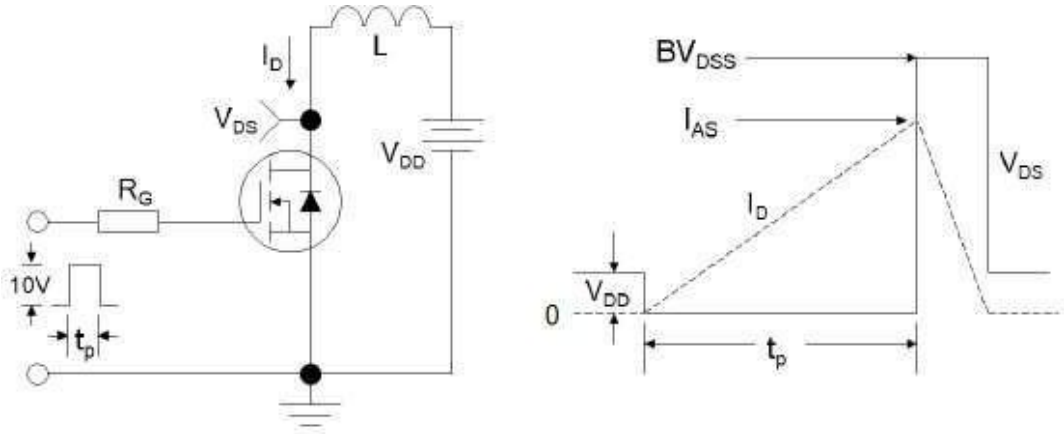
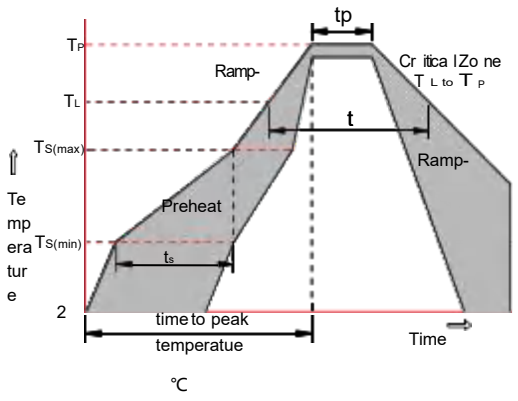


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Soldering parameters

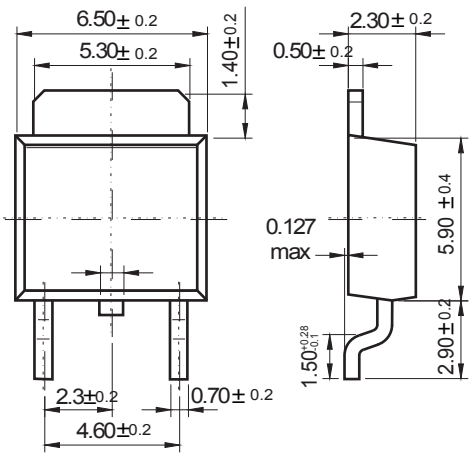
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid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

FIG5: Reflow condition

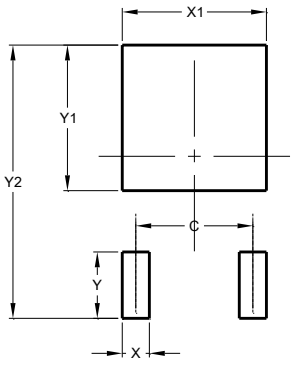


Package Dimensions & Suggested Pad Layout

TO-252



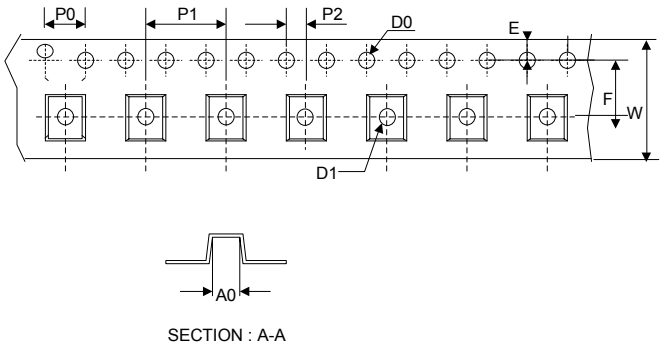
Dimensions in inches and (millimeters)



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

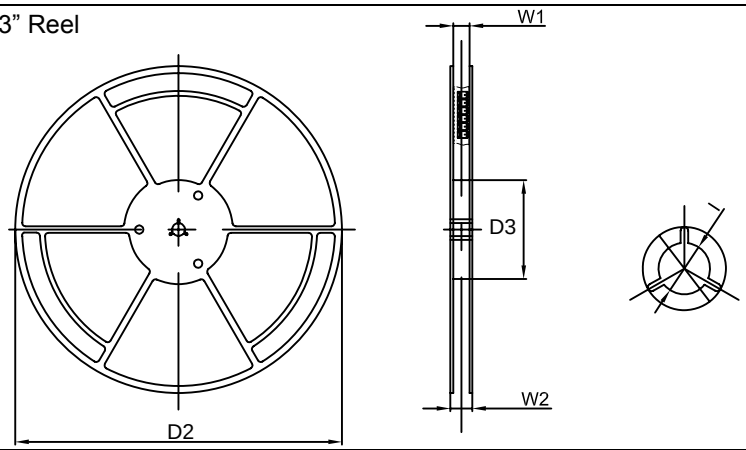
Tape & rell specification

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

13” Reel



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

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