

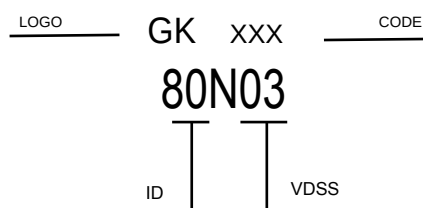
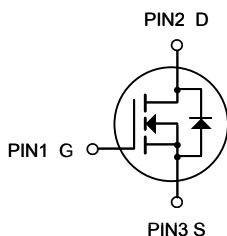
V_{DS} 30 V
 I_D 80 A
 $R_{DS(ON)}$ 4.0m Ω

FEATURES

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

DESCRIPTION

- DC-DC Converters
- Power management functions
- Industrial and Motor Drive application



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Value	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($T_c=25^\circ C$) (Note 1)	80	A
	Drain Current-Continuous($T_c=100^\circ C$)	55	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	230	A
P_D	Maximum Power Dissipation($T_c=25^\circ C$)	65	W
	Maximum Power Dissipation($T_c=100^\circ C$)	32.5	W
E_{AS}	Avalanche energy (Note 3)	90	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	$^\circ C$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2	$^\circ C/W$

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 =250μA	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V,V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.5	2.5	V
g _{FS}	Forward Transconductance	V _{DS} =5V,I _D =20A	10	20		S
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A		4.0	5.3	mΩ
		V _{GS} =5V, I _D =15A		6.5	8.5	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V,V _{GS} =0V, f=1.0MHz		2200		pF
C _{oss}	Output Capacitance			312		pF
C _{rss}	Reverse Transfer Capacitance			195		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V,f=1.0MHz		2		Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω,R _{GEN} =3Ω		7		nS
t _r	Turn-on Rise Time			22		nS
t _{d(off)}	Turn-Off Delay Time			30		nS
t _f	Turn-Off Fall Time			5		nS
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =25V, I _D =12A		47		nC
Q _{gs}	Gate-Source Charge			8		nC
Q _{gd}	Gate-Drain Charge			9		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)				80	A
V _{SD}	Forward on Voltage	V _{GS} =0V,I _S =20A			1.2	V

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=30V$, $V_G=10V$, $R_G=25\Omega$

RATING AND CHARACTERISTIC CURVES

Figure 1. Output Characteristics

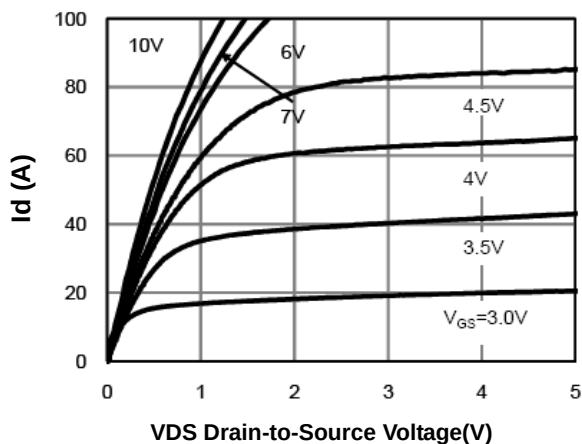


Figure 2. Transfer Characteristics

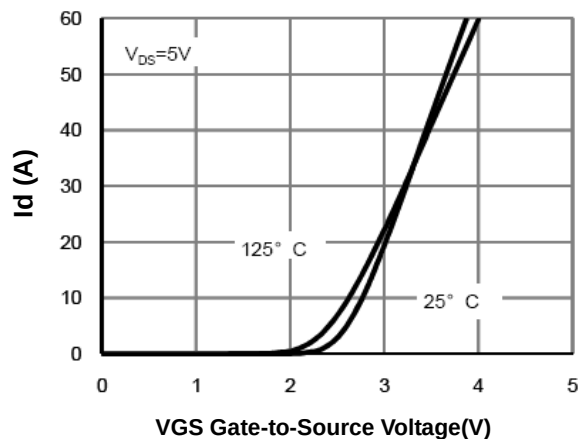


Figure 3. Max BV_{DSS} vs Junction Temperature

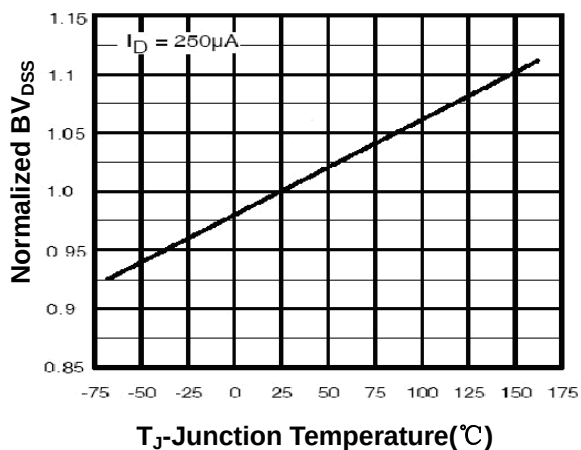


Figure 4. Drain Current

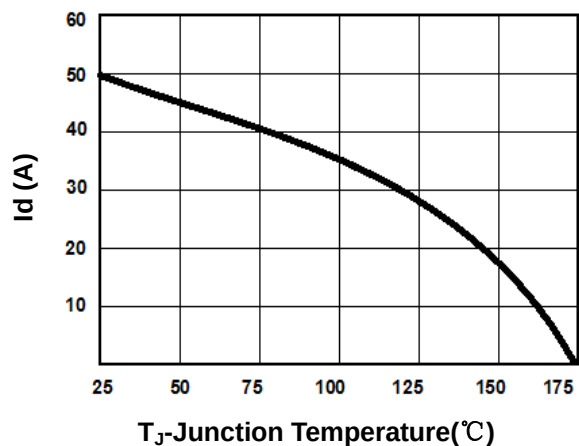


Figure 5. $V_{GS(th)}$ vs Junction Temperature

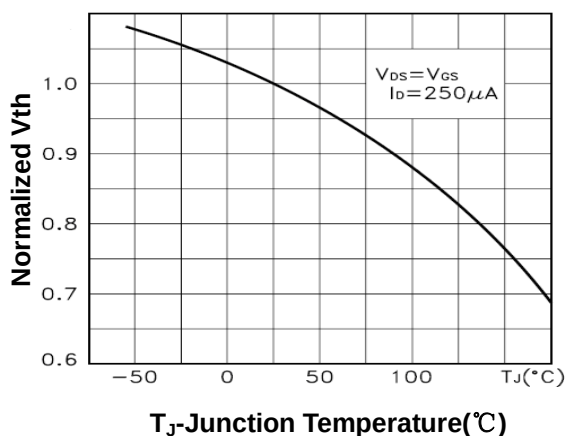
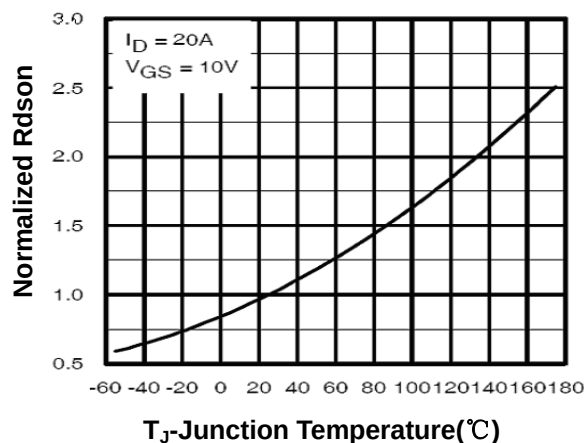


Figure 6. $R_{DS(on)}$ vs Junction Temperature



RATING AND CHARACTERISTIC CURVES

Figure 7. Gate Charge Waveforms

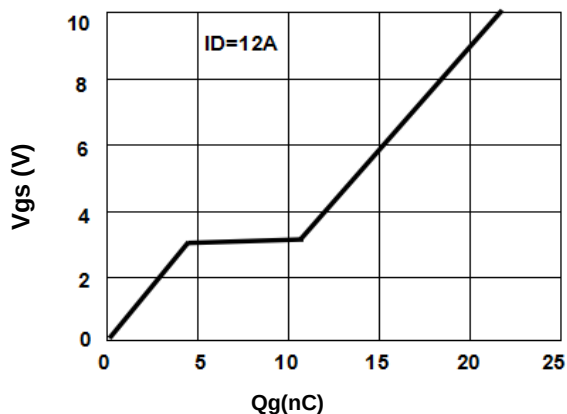


Figure 8. Capacitance

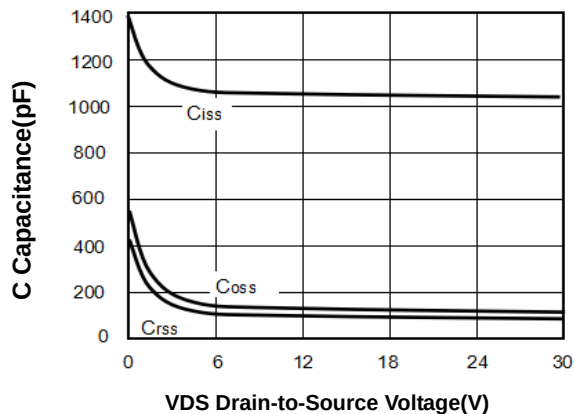


Figure 9. Body-Diode Characteristics

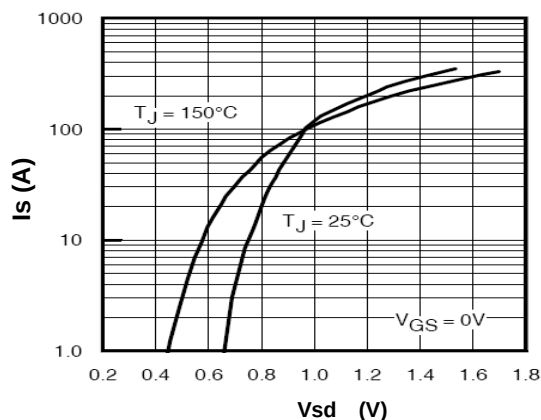


Figure 10. Maximum Safe Operating Area

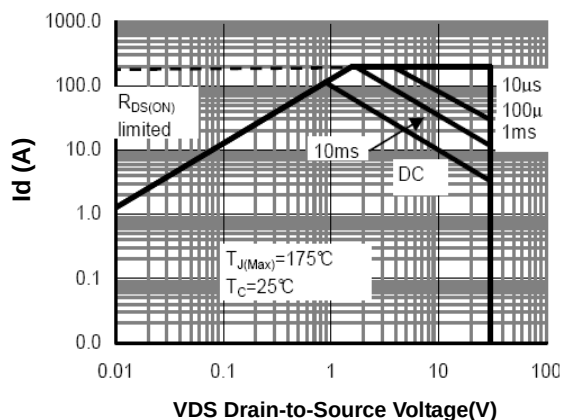
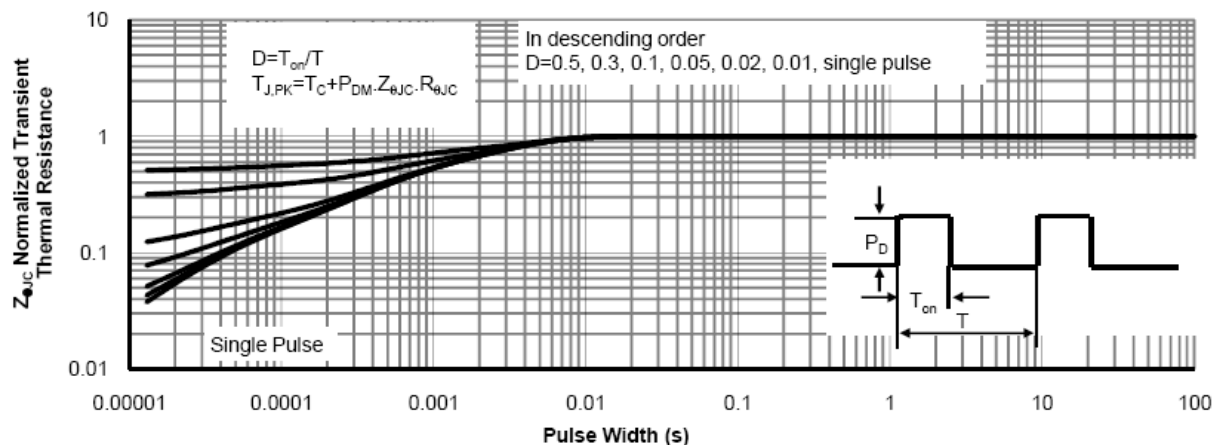
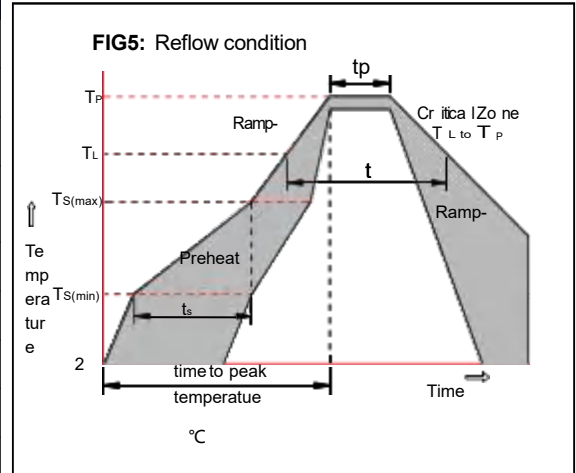


Figure 11. Normalized Maximum Transient Thermal Impedance



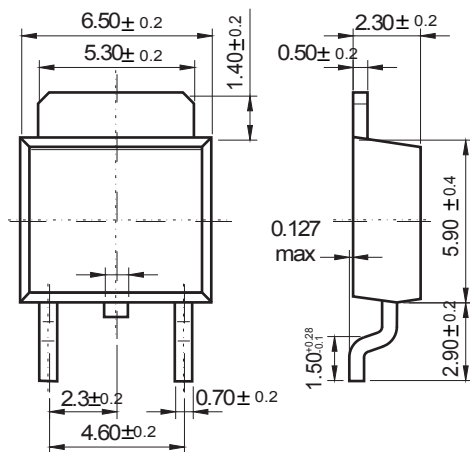
Soldering parameters

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

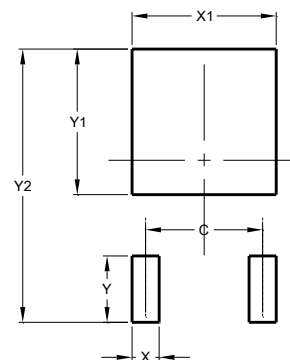


Package Dimensions & Suggested Pad Layout

TO-252

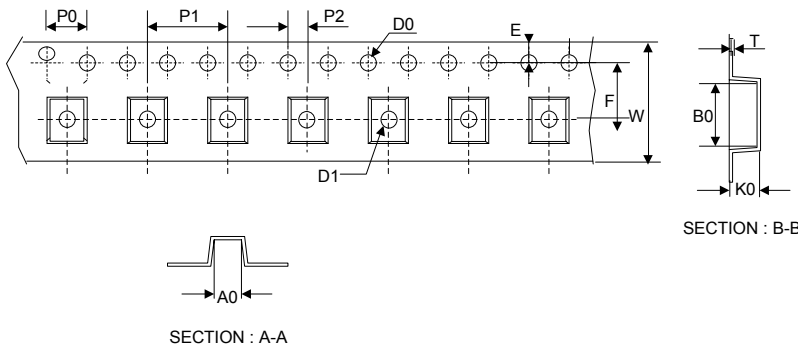
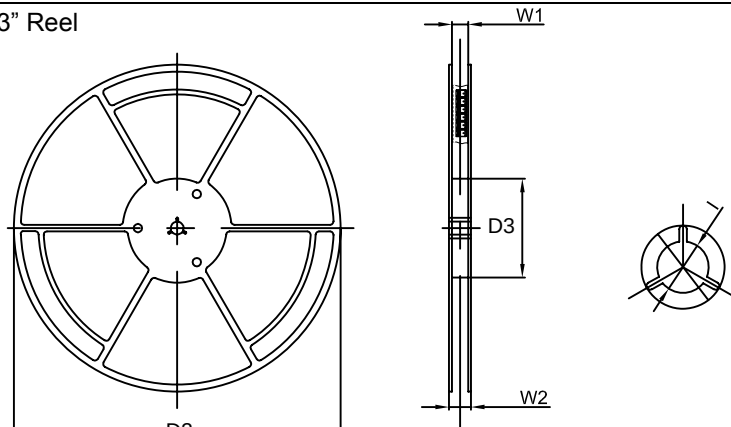


Dimensions in inches and (millimeters)



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)
 SECTION : A-A SECTION : B-B		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
		D2	330.0±5.0
		D3	100.0±4.0
		W1	20.0±5.0
13" Reel		W2	25.0±5.0
		I	13.0±2.0
		Quantity: 2500PCS	