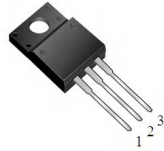


V_{DSS} 650 V
 I_D 7 A
 $R_{DS(ON)}$ 1.18 Ω

FEATURES

- 650V,7A
- $R_{DS(ON)} = 1.18\Omega$ (Typ.) @ $V_{GS} = 10V, I_D = 3.5A$
- Fast Switching
- Improved dv/dt Capability
- 100% Avalanche Tested

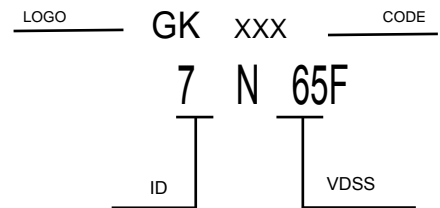
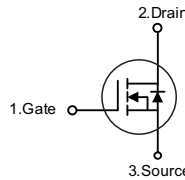


ITO-220AB



APPLICATION

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage	V_{GSS}	± 30	V
Avalanche Current (Note 2)	I_{AR}	7	A
Drain Current	Continuous	I_D	7
	Pulsed (Note 2)	I_{DM}	29.6
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	530
	Repetitive (Note 2)	E_{AR}	14.2
Peak Diode Recovery dv/dt (Note 4)	dv/dt	4.5	V/ns
Power Dissipation	P_D	48	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating : Pulse width limited by maximum junction temperature
3. $L = 19.5\text{mH}, I_{AS} = 7\text{A}, V_{DD} = 50\text{V}, R_G = 25\ \Omega$, Starting $T_J = 25^\circ\text{C}$
4. $I_{SD} \leq 7\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

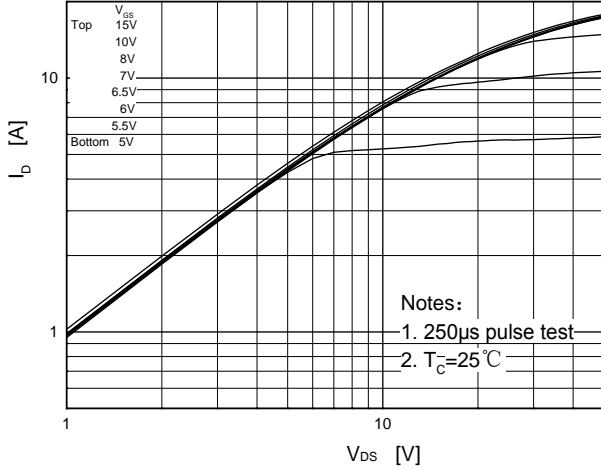
Electrical Characteristics (T_c=25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	650			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 650V, V _{GS} = 0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS}			100	nA
	Reverse				-100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C		0.67		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 3.5A		1.18	1.67	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0 MHz			1400	pF
Output Capacitance	C _{OSS}				180	pF
Reverse Transfer Capacitance	C _{RSS}			16	21	pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 325V, I _D = 7.4A, R _G = 25Ω (Note 1, 2)			70	ns
Turn-On Rise Time	t _R				170	ns
Turn-Off Delay Time	t _{D(OFF)}				140	ns
Turn-Off Fall Time	t _F				130	ns
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _G	V _{DS} =520V, I _D = 7A, V _{GS} =10 V (Note 1, 2)		29	38	nC
Gate-Source Charge	Q _{GS}			7		nC
Gate-Drain Charge	Q _{GD}			14.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 7A			1.4	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				7	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				29.6	A
Reverse Recovery Time	t _{rr}	V _{GS} = 0V, I _S = 7A, dI _F / dt = 100A/μs (Note 1)		320		ns
Reverse Recovery Charge	Q _{RR}			2.4		μC

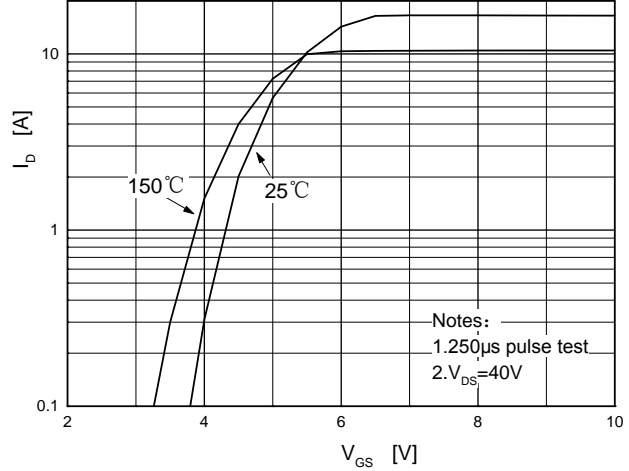
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essentially independent of operating temperature

RATING AND CHARACTERISTIC CURVES

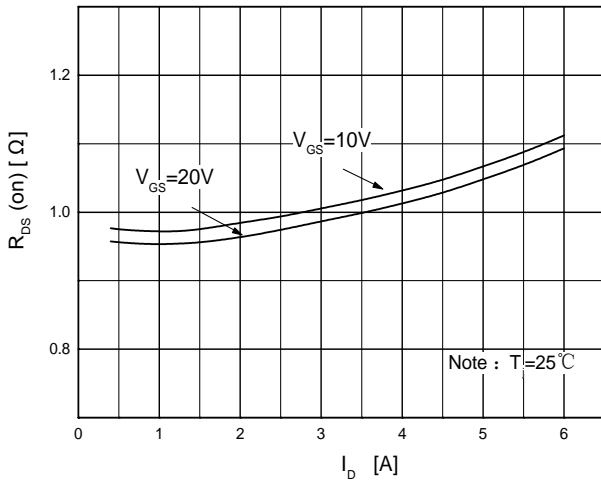
On-Region Characteristics



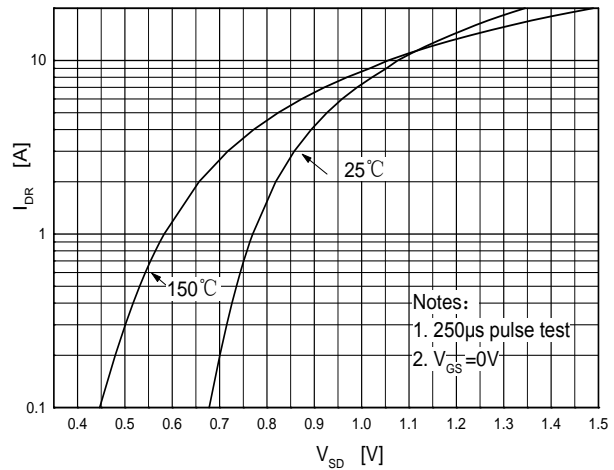
Transfer Characteristics



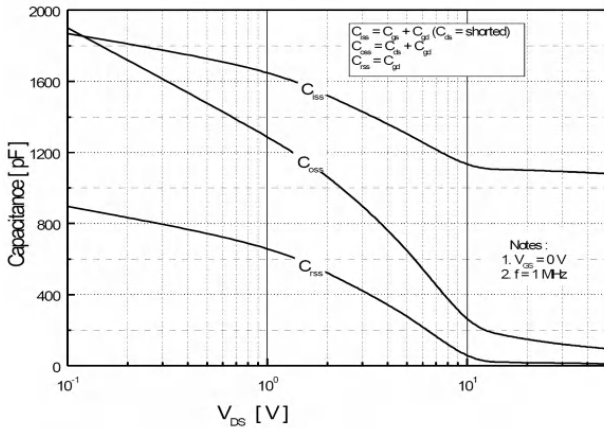
On-Resistance Variation vs. Drain Current and Gate Voltage



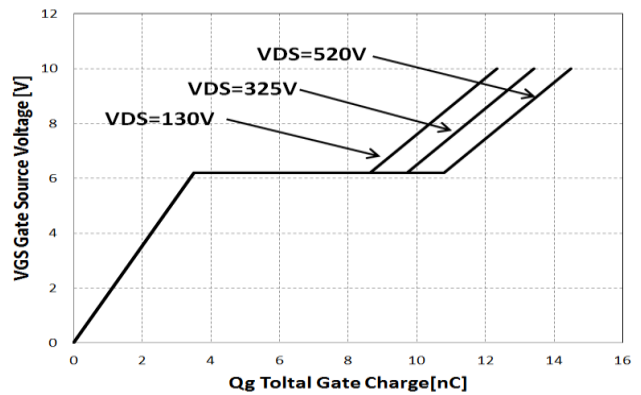
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics

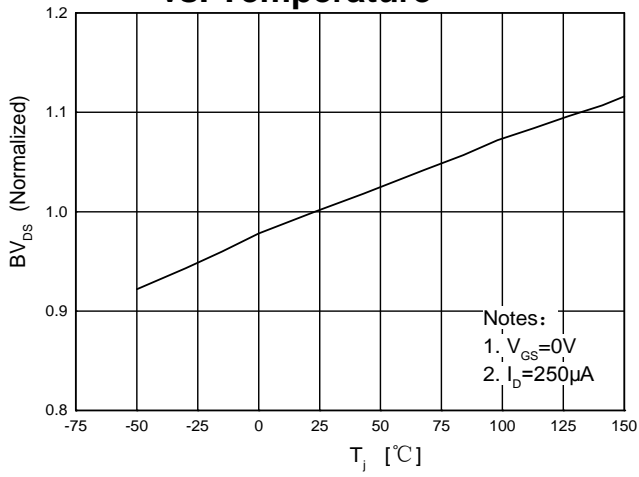


Gate Charge Characteristics

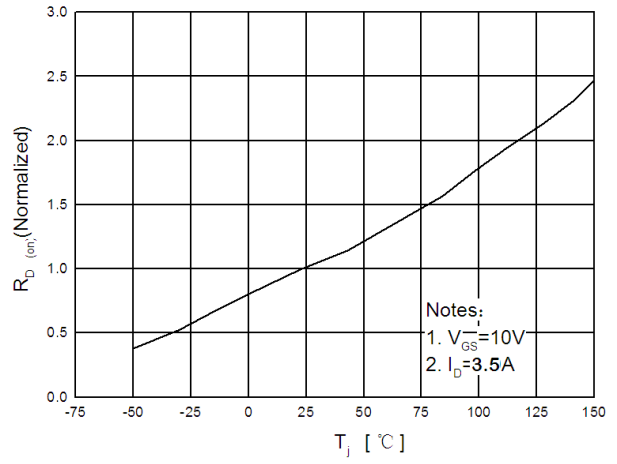


RATING AND CHARACTERISTIC CURVES

Breakdown Voltage Variation vs. Temperature



On-Resistance Variation vs. Temperature

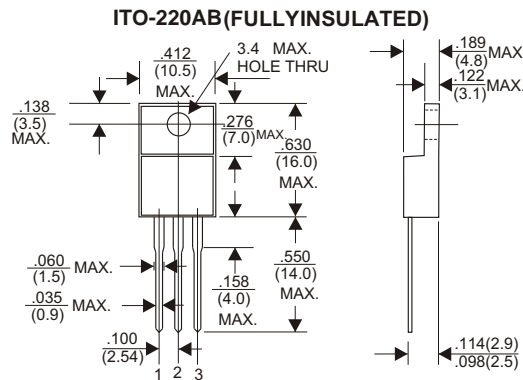


Soldering parameters

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



Dimensions in inches and (millimeters)