

650V N-Channel Super Junction MOSFET

Voltage	650 V	Rdson	600 mΩ
Current	7.3 A	Qg	17 nC

Feature:

- $R_{DS(ON)}$ Max, $V_{GS}@10V$: 600mΩ
- Easy to use/ drive
- High Speed Switching and Low $R_{DS(ON)}$
- 100% Avalanche Tested
- 100% Rg Tested
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

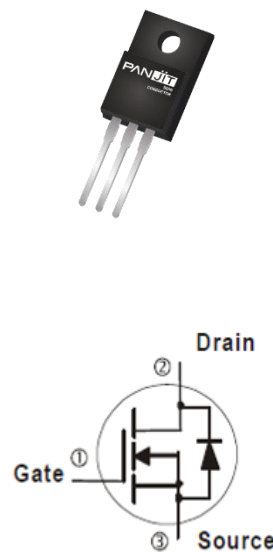
Mechanical Data

- Case: ITO-220AB-F package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.068 ounces, 2 grams

Application

- PD Charger, Adapter, Monitor PSU

ITO-220AB-F



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage @ T_{jmax}		V_{DS}	700	V
Drain-Source Voltage		V_{DS}	650	
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	7.3	A
	$T_C=100^\circ\text{C}$		4.6	
Pulsed Drain Current	$T_C=25^\circ\text{C}$	I_{DM}	21.9	A
Single Pulse Avalanche Energy		E_{AS}	78	mJ
MOSFET dv/dt ruggedness		dv/dt	50	V/ns
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	32	W
	$T_C=100^\circ\text{C}$		13	
Insulation Withstand Voltage for ITO-220AB-F		V_{ISO}	3.5	kV
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	$^\circ\text{C}$

Thermal Characteristics

PARAMETER		SYMBOL	MAXIMUM	UNITS
Thermal Resistance	Junction-to-Case	$R_{\theta JC}$	3.9	$^\circ\text{C/W}$
	Junction-to-Ambient (Note 3)	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

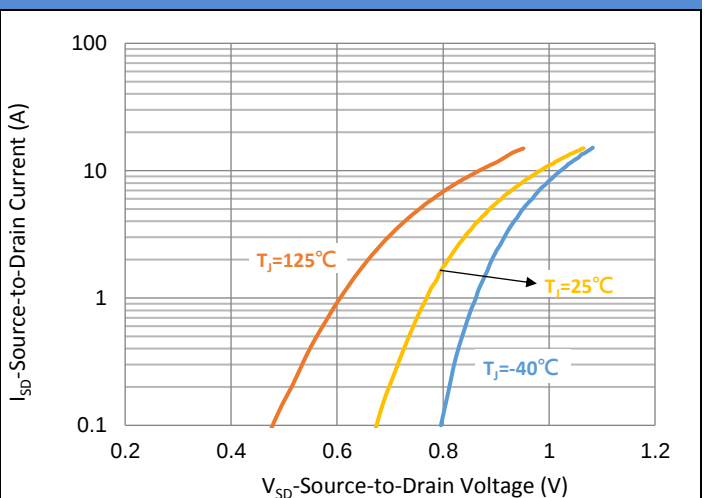
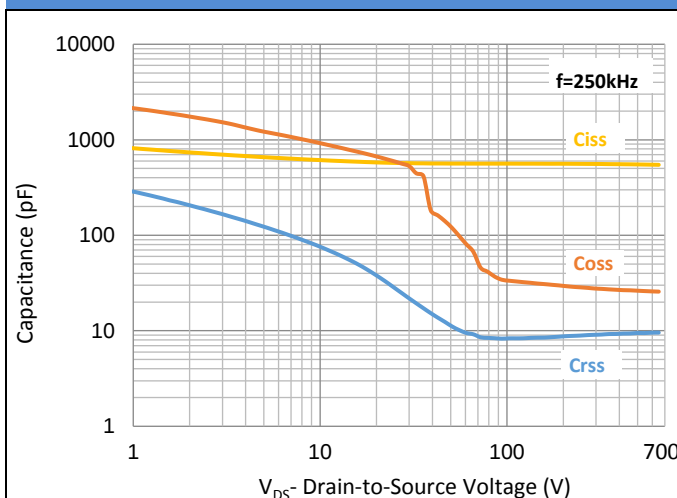
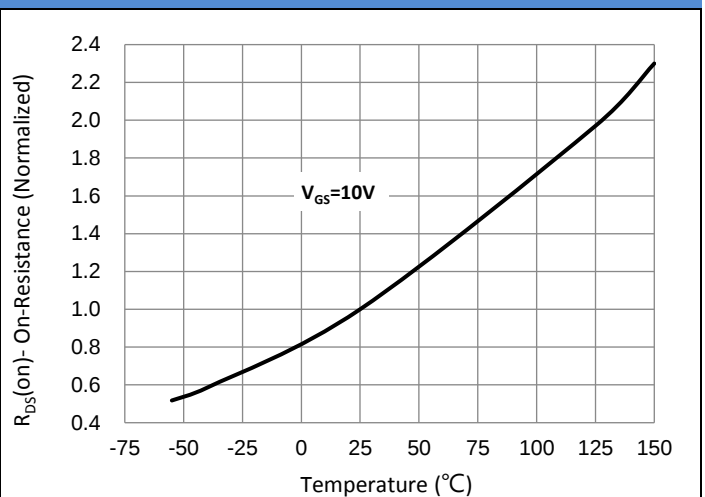
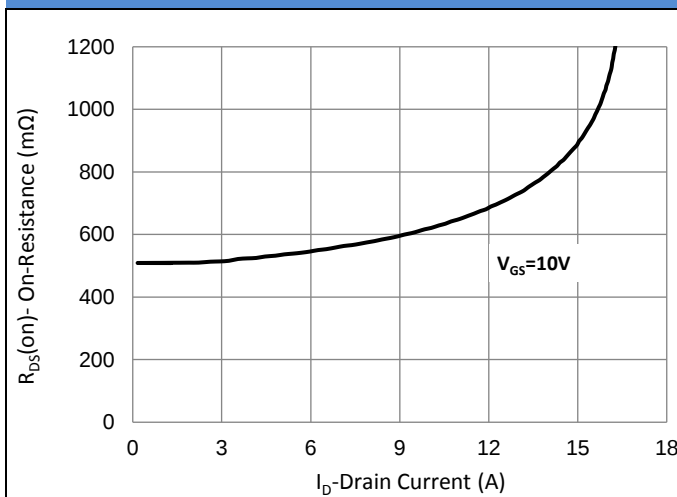
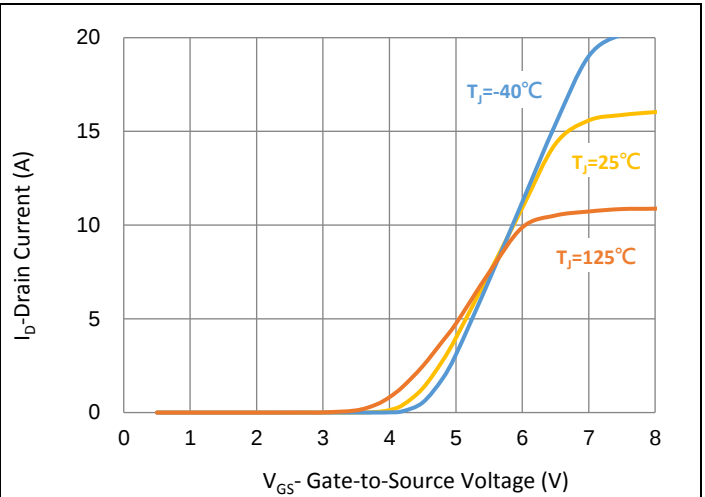
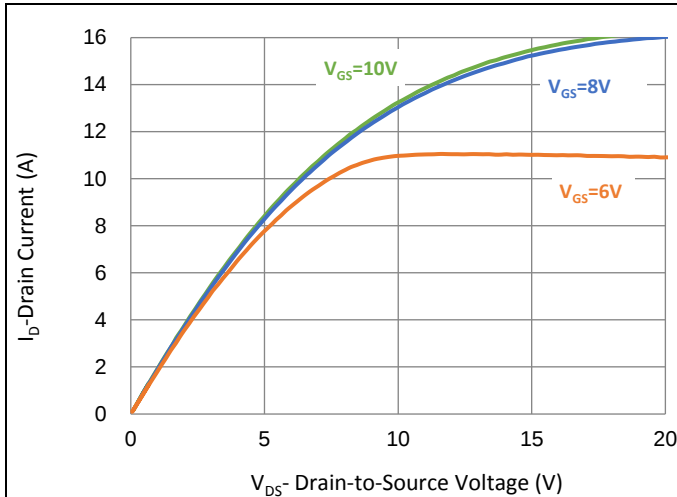
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	650	730	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3.3	4	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.1A^{(Note\ 1)}$	-	502	600	m Ω
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Transfer characteristics	gfs	$V_{DS}=20V, I_D=7.3A$	-	7	-	S
Dynamic (Note 5)						
Total Gate Charge	Q_g	$V_{DS}=520V, I_D=7.3A,$ $V_{GS}=10V$	-	17	-	nC
Gate-Source Charge	Q_{gs}		-	4	-	
Gate-Drain Charge	Q_{gd}		-	9	-	
Input Capacitance	C_{iss}	$V_{DS}=400V, V_{GS}=0V,$ $f=250kHz$	-	554	-	pF
Output Capacitance	C_{oss}		-	27	-	
Reverse Transfer Capacitance	C_{rss}		-	9	-	
Effective Output Capacitance Energy Related	$C_{o(er)}$	$V_{DS}=0V$ to $520V,$ $V_{GS}=0V, f=250kHz$ (Note 4)	-	33	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=325V, I_D=7.3A,$ $V_{GS}=10V, R_G=25\Omega$ (Note 2)	-	30	-	ns
Turn-On Rise Time	t_r		-	44	-	
Turn-Off Delay Time	$t_{d(off)}$		-	98	-	
Turn-Off Fall Time	t_f		-	40	-	
Gate Resistance	R_g	$f=1.0MHz$	-	22	-	Ω
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	7.3	A
Diode Forward Voltage	V_{SD}	$I_S=7.3A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Charge	Q_{rr}	$I_S=7.3A$	-	3.3	-	μC
Reverse Recovery Time	T_{rr}	$di/dt=100A/\mu s$	-	289	-	ns

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance.
4. $C_{o(er)}$ is a capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0V to 80% $V_{(BR)DSS}$
5. Guaranteed by design, not subject to production testing

Typical Characteristic Curves



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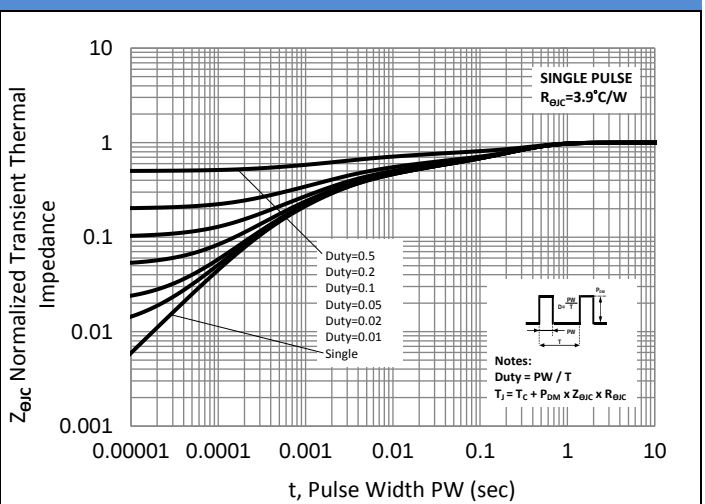
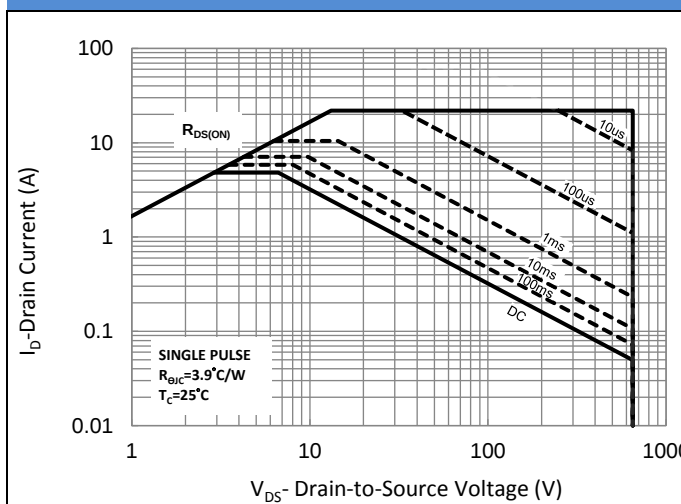
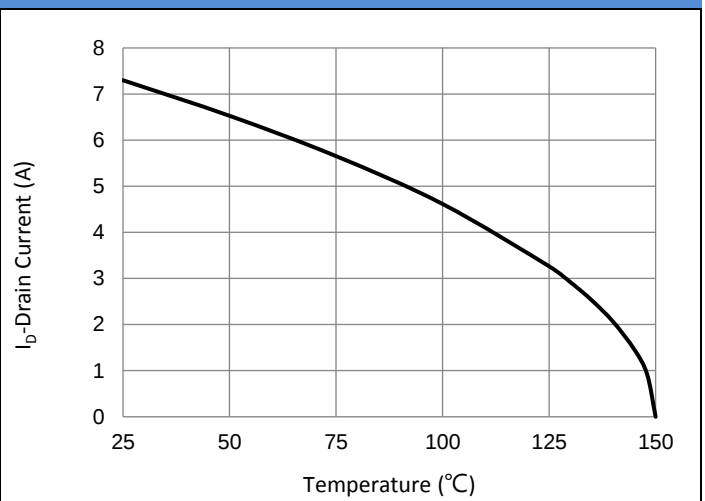
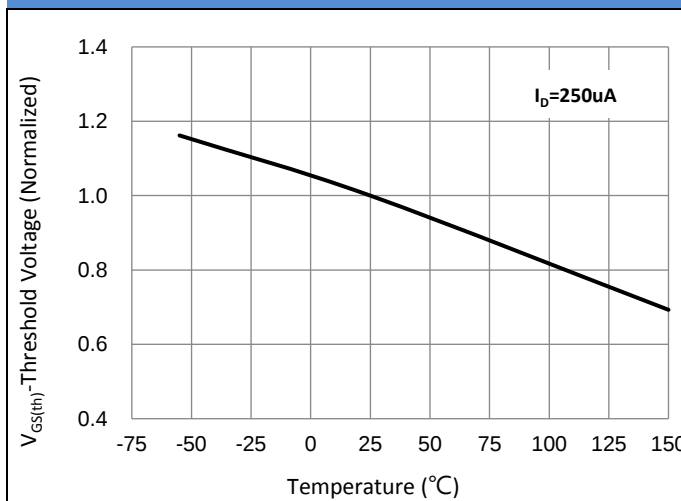
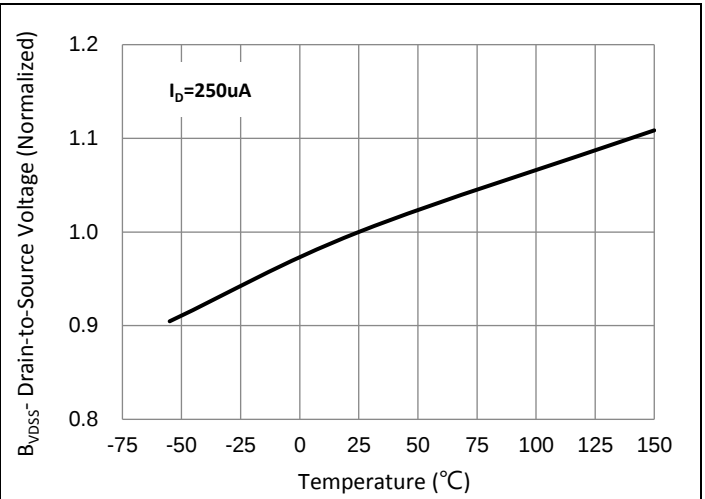
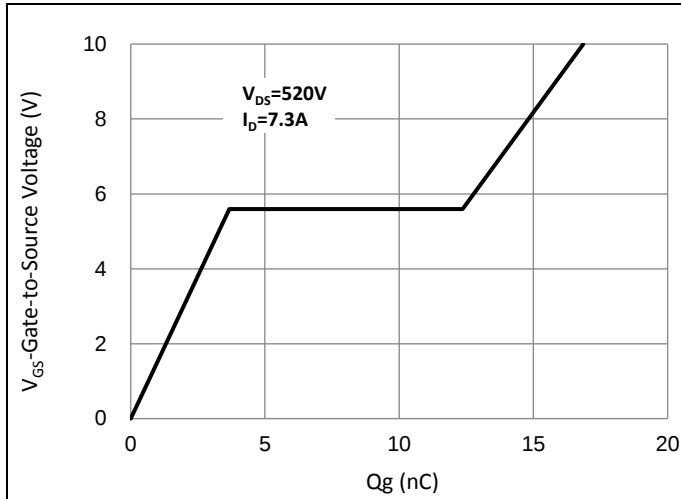


Fig.11 Maximum Safe Operating Area

Fig.12 Normalized Transient Thermal Impedance

TYPICAL CHARACTERISTIC CURVES

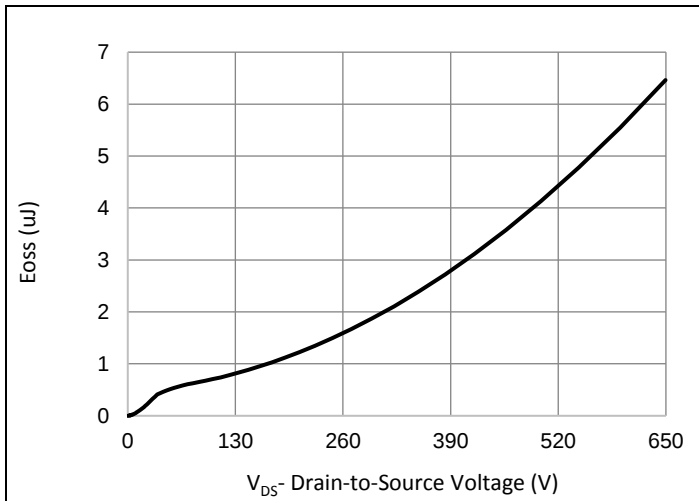
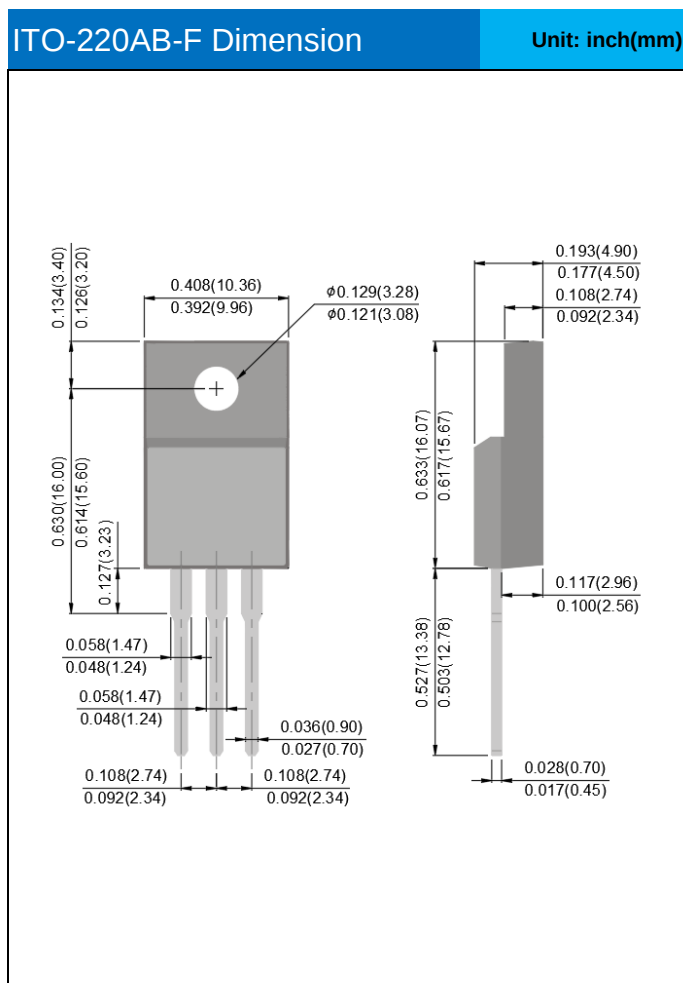


Fig.13 Typ. Coss Stored Energy

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PJMF600N65E1	ITO-220AB-F	50pcs / Tube	600N65E1

Packaging Information



Marking Diagram

PJ
600N65E1
YWLL x

Y = Year Code
W = Week Code (A~Z)
LL = Lot Code (00~99)
x = Production Line Code

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