600V Super-junction Power MOSFET

V_{DSS}	600V
I_D	15A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	0.23Ω

DESCRIPTION：

·Very low FOM $R_{DS(on)}$×Qg

·100% avalanche tested

·RoHS compliant

·Ultra-fast body diode

·Easy to use/drive

TYPICAL APPLICATIONS：

·Switch Mode Power Supply (SMPS)

·Uninterruptible Power Supply (UPS)

·Power Factor Correction (PFC)

·LLC Half-bridge

·Charger



ITO-220AB

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage (V_{GS} = 0V)		V_{DSS}	600	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	15 9	A
Pulsed Drain Current (1)		$I_{D\ pulse}$	45	A
Gate-Source Voltage		V_{GS}	±30	V
Single Pulsed Avalanche Energy (2)		E_{AS}	284	mJ
Repetitive Avalanche Energy (2)		E_{AR}	0.44	mJ
Avalanche Current		I_{AR}	2.4	A
Continuous Diode Forward Current		I_S	15	A
Diode Pulsed Current		$I_{S,pulse}$	45	A
Power dissipation		P_D	32	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

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

2. I_{AS} = 2.4A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	600			V
Zero Gate Voltage Drain Current VDS = 600 V, VGS = 0 V ,Tj=25℃ VDS = 600 V, VGS = 0 V ,Tj=150℃	I_{DSS}			1.75 1750	uA
Gate-Source Leakage Current VGS = ±30V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	3		5	V
Drain-Source On-State Resistance VGS = 10V, ID = 7.5A	$R_{DS(on)}$		0.23	0.26	Ω
Gate Resistance f = 1.0MHz open drain	R_G		12.5		Ω
Input capacitance f=1MHz, VDS=100 V, VGS=0 V	C_{iss}		1194		pF
Output capacitance f=1MHz, VDS=100 V, VGS=0 V	C_{oss}		62		pF
Reverse transfer capacitance f=1MHz, VDS=100 V, VGS=0 V	C_{rss}		2.4		pF
Total Gate Charge VDS= 480V, ID= 15A,VGS= 10V	Q_G		28.5		nC
Gate to Source Charge VDS= 480V, ID= 15A,VGS= 10V	Q_{GS}		8		nC
Gate to Drain Charge VDS= 480V, ID= 15A,VGS= 10V	Q_{GD}		11		nC
Turn-on delay time VDD=400 V, ID=15A, R_{GEN}=25Ω	td (ON)		27		ns
Rise time VDD=400 V, ID=15A, R_{GEN}=25Ω	tr		29		ns
Turn-off delay time VDD=400 V, ID=15A, R_{GEN}=25Ω	td (OFF)		114		ns
Fall time VDD=400 V, ID=15A, R_{GEN}=25Ω	tf		33		ns
Diode Forward Voltage VGS = 0V, I_S =7.5A	V_{SD}		1.0	1.5	V
Revers Recovery Time V_R=400V,I_F= I_S, di_F/dt = 100A/us	Trr		137		ns
Revers Recovery Charge V_R=400V,I_F= I_S, di_F/dt = 100A/us	Qrr		0.73		uC
Peak Reverse Recovery Current V_R=400V,I_F= I_S , di_F/dt = 100A/us	Irrm		10.6		A

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	80 3.9	℃/W

Typical Performance Characteristics

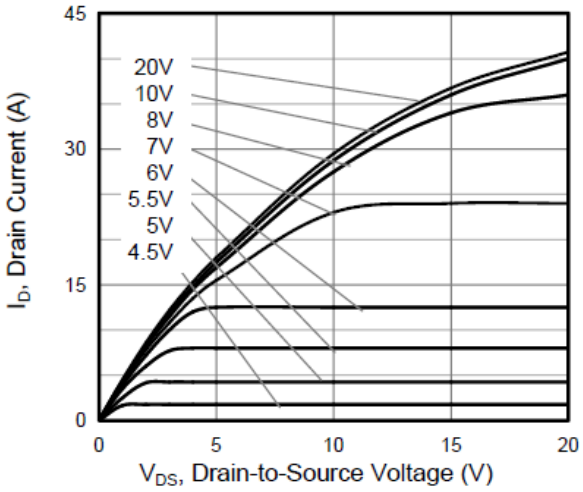


Figure 1. Output Characteristics

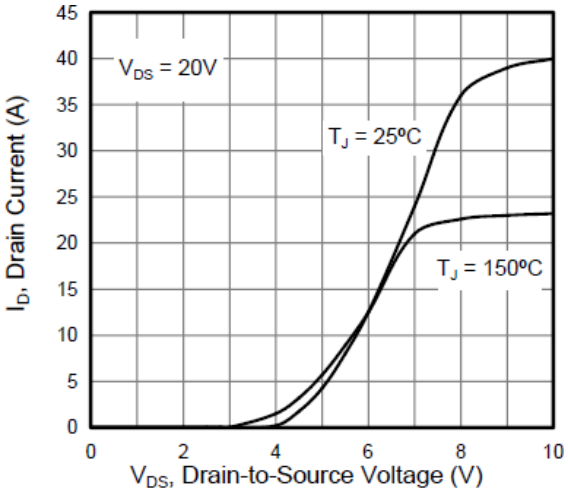


Figure 2. Transfer Characteristics

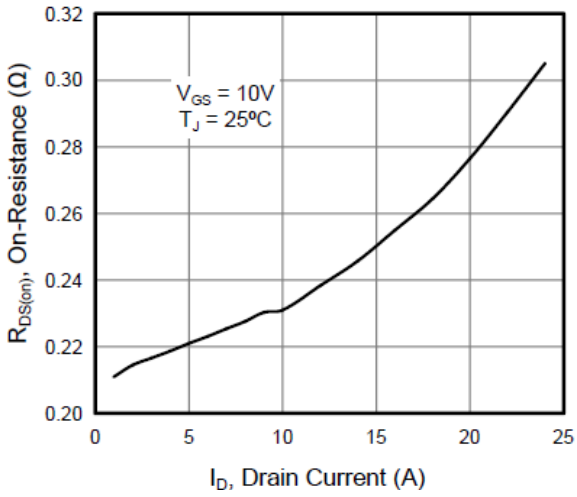


Figure 3. On-Resistance vs. Drain Current

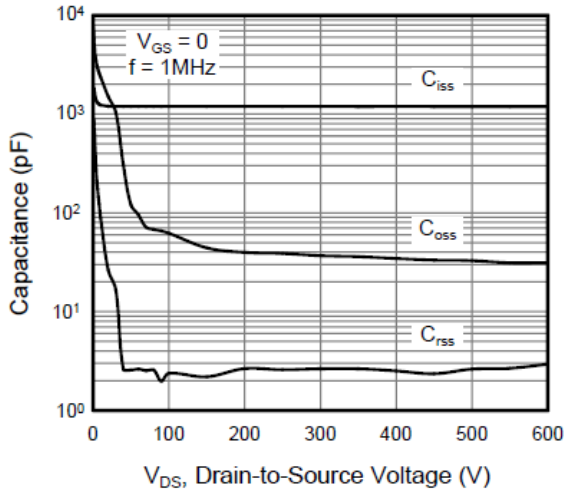


Figure 4. Capacitance

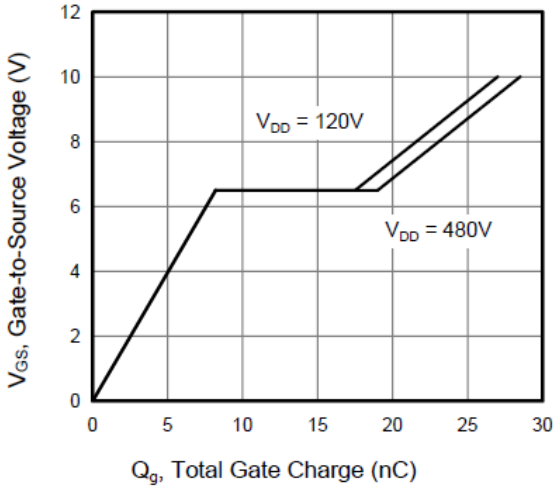


Figure 5. Gate Charge

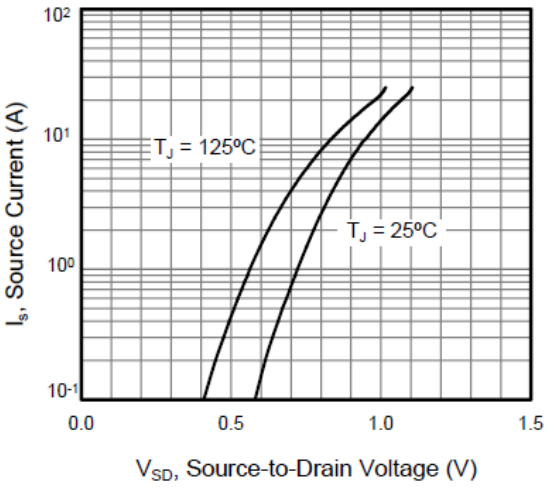


Figure 6. Body Diode Forward Voltage

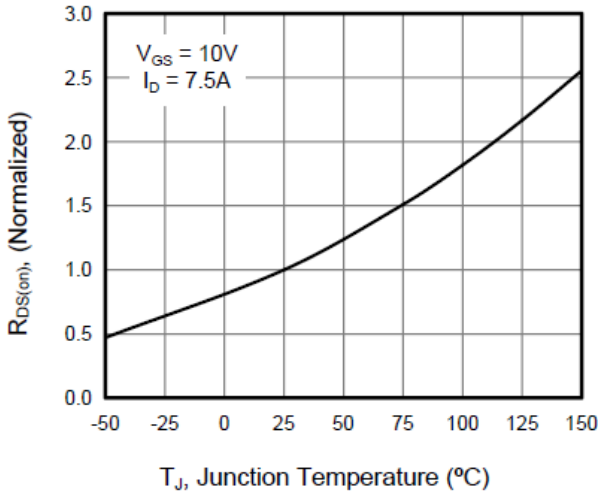


Figure 7. On-Resistance vs.Temperature

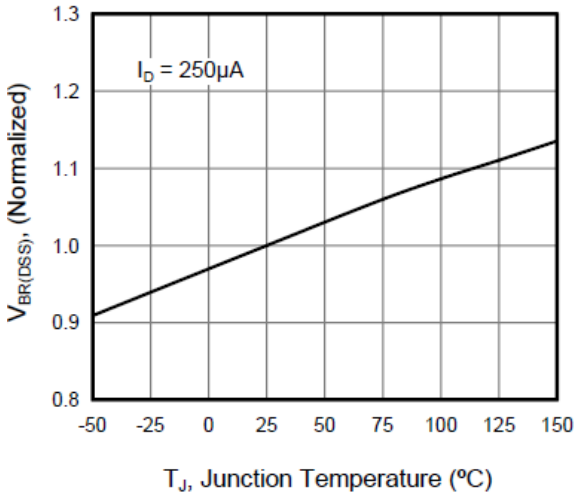


Figure8. Breakdown voltage vs.Junction Temperature

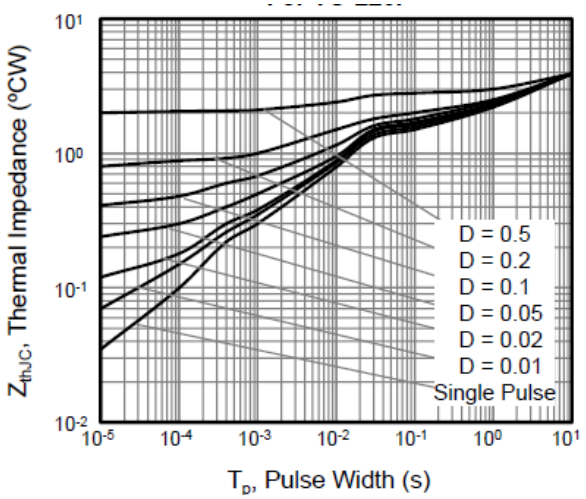


Figure 9. Transient Thermal Impedance

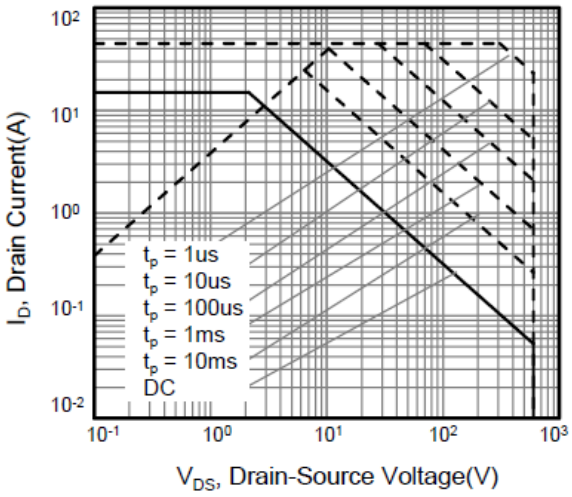


Figure 10. Safe Operation Area

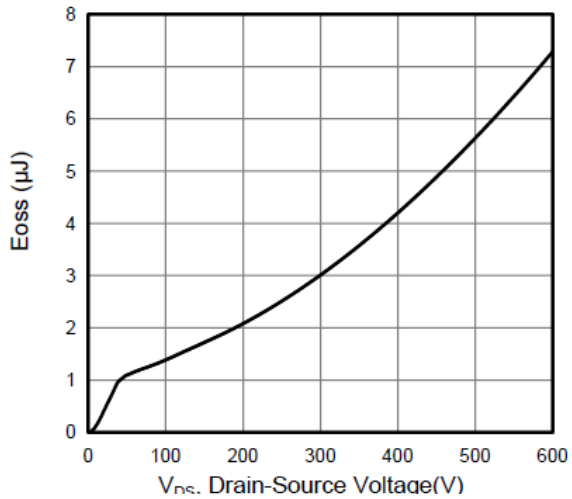
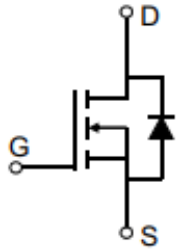
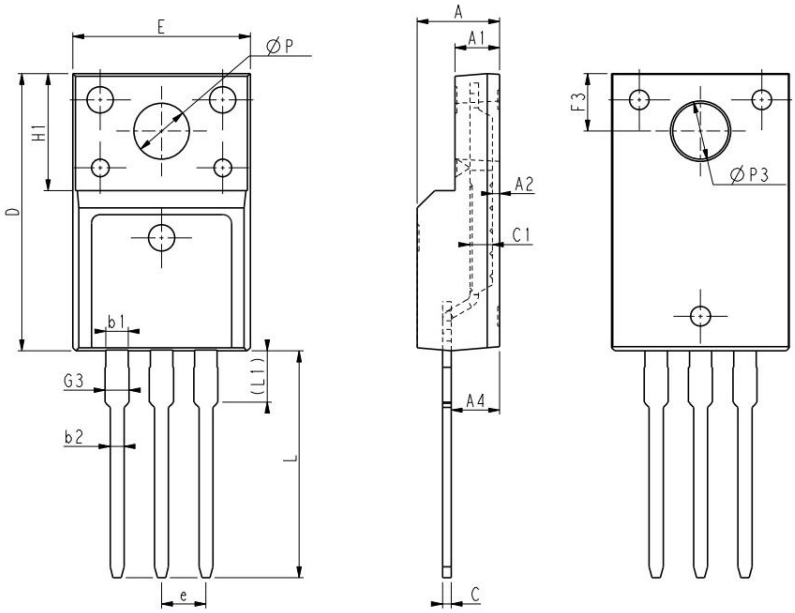


Figure 11. Typ. Coss Stored Energy

·Circuit diagram



·Package outlines : Dimensions in (mm)



Unit:mm			
Symbol	Min.	Nom	Max.
E	9.96	10.16	10.36
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2	0.30	0.45	0.60
A4	2.56	2.76	2.96
c	0.40	0.50	0.65
c1	1.20	1.30	1.35
D	15.57	15.87	16.17
H1	6.70REF		

Unit:mm			
Symbol	Min.	Nom	Max.
e	2.54BSC		
L	12.68	12.98	13.28
L1	2.93	3.03	3.13
ΦP	3.03	3.18	3.38
ΦP3	3.15	3.45	3.65
F3	3.15	3.30	3.45
G3	1.25	1.35	1.55
b1	1.18	1.28	1.43
b2	0.70	0.80	0.95

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