600V Super Junction MOSFET

DESCRIPTION：

·Low gate charge

·Low RDS(on) per chip area(Low FOM)

·Very low switching and conduction loss

·Extremely high commutation ruggedness

·100% avalanche tested

V_{DSS}	600V
I_D @V_{GS}=10V	26A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	108mΩ



ITO-220

TYPICAL APPLICATIONS：

·TV and PC Power

·Adopter and Lighting

·Telecom and UPS(Uninterruptible Power Supply)

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

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	26 16.5	A
Pulsed Drain Current		I_{DM}	78	A
Avalanche Energy, Single Pulse	Starting Tj = 25˚C, IAS = 4.5A,VDD = 50V, ID = IAR	E_{AS}	85	mJ
Power Dissipation		Ptot	32.9	W
Reverse Diode dv/dt		dv/dt	15	V/ns
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	80 3.8	℃/W

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
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2.5	3.5	4.5	V
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			1	uA
Zero Gate Voltage Drain Current VDS = 600 V, VGS = 0 V ,Tj=25℃	I_{DSS}			1	uA
Drain-Source On-State Resistance VGS = 10V, ID = 13A, Tj=25°C	$R_{DS(on)}$		108	120	mΩ
Input capacitance f=250KHz, VDS=400 V, VGS=0 V	C_{iss}		1840		pF
Output capacitance f=250KHz, VDS=400 V, VGS=0 V	C_{oss}		29.8		pF
Reverse transfer capacitance f=250KHz, VDS=400 V, VGS=0 V	C_{rss}		4.76		pF
Effective Output Capacitance, Energy Related VGS=10V, VDS=0 to 400V	$C_{O(er)}$		55.4		pF
Effective Output Capacitance, Time Related VGS=10V, VDS=0 to 400V, ID=Constant	$C_{O(tr)}$		470		pF
Turn-on delay time VDD=400 V, ID=13A, VGS=10V, R_{GEN}=25Ω	$td_{(ON)}$		77		ns
Rise time VDD=400 V, ID=13A, VGS=10V, R_{GEN}=25Ω	tr		22		ns
Turn-off delay time VDD=400 V, ID=13A, VGS=10V, R_{GEN}=25Ω	$td_{(OFF)}$		155		ns
Fall time VDD=400 V, ID=13A, VGS=10V, R_{GEN}=25Ω	tf		13		ns
Gate Resistance f=1MHz	R_g		9		Ω
Total Gate Charge VDS= 400V, ID= 26A,VGS= 10V	Q_G		37.2		nC
Gate to Source Charge VDS= 400V, ID= 26A,VGS= 10V	Q_{GS}		10.7		nC
Gate to Drain Charge VDS= 400V, ID= 26A,VGS= 10V	Q_{GD}		15.5		nC
Diode Forward Voltage VGS = 0V, I_S =13A	V_{SD}			1.4	V
Continuous Diode forward current	I_{SD}			26	A
Revers Recovery Time V_R=400V,I_F=26A, di_F/dt = 100A/us	Trr		291		ns
Peak Reverse Recovery Current V_R=400V,I_F=26A, di_F/dt = 100A/us	Irrm		23.7		A
Revers Recovery Charge V_R=400V,I_F=26A, di_F/dt = 100A/us	Qrr		3.7		nC

Typical Performance Characteristics

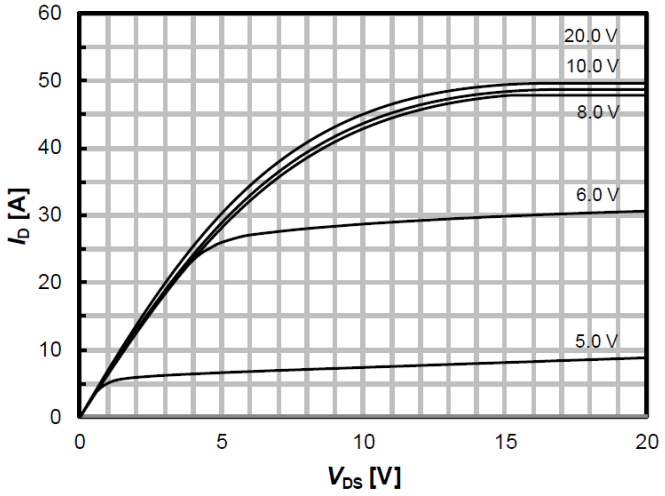


Figure 1. Output Characteristics

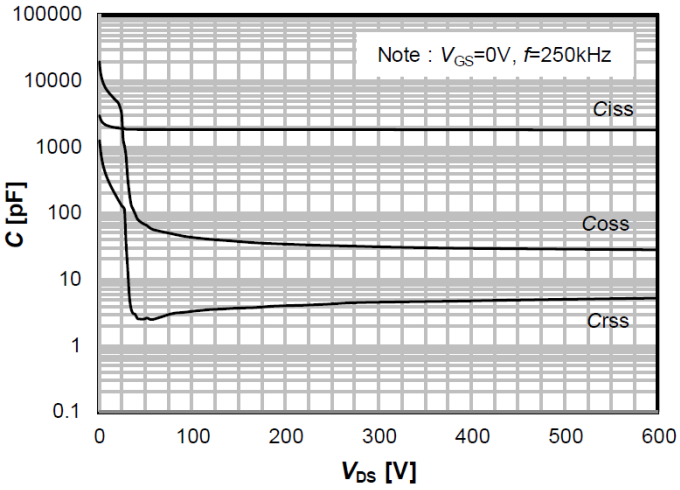


Figure 2. Capacitances

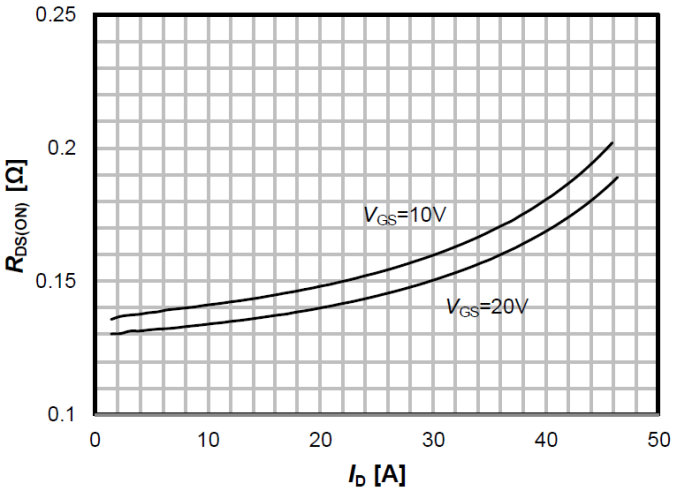


Figure 3. On-state Resistance

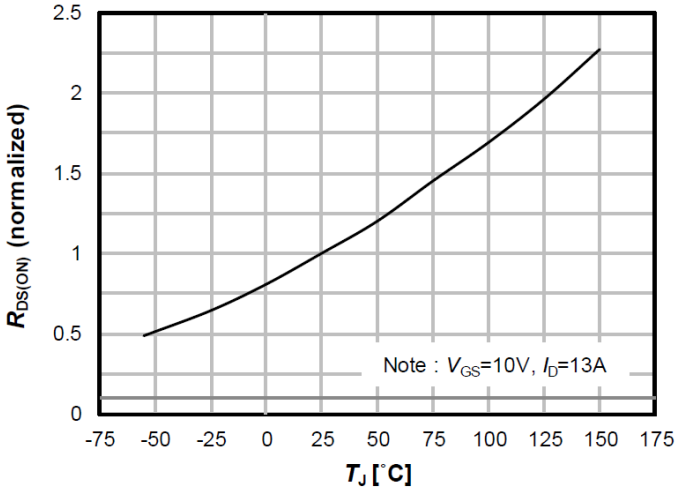


Figure 4. On-state Resistance with Temperature

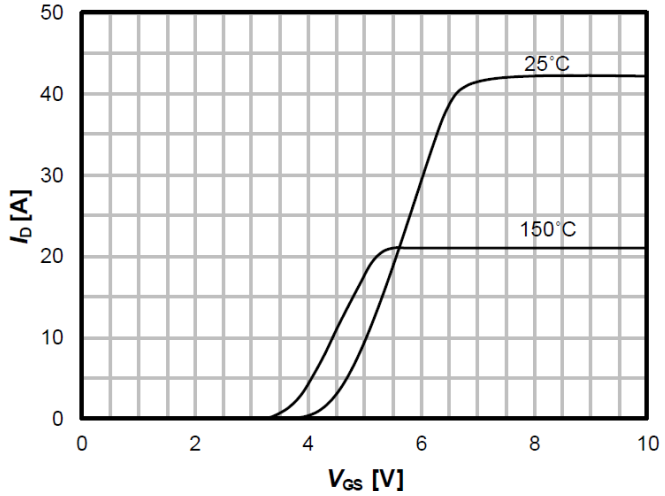


Figure 5. Transfer Characteristics

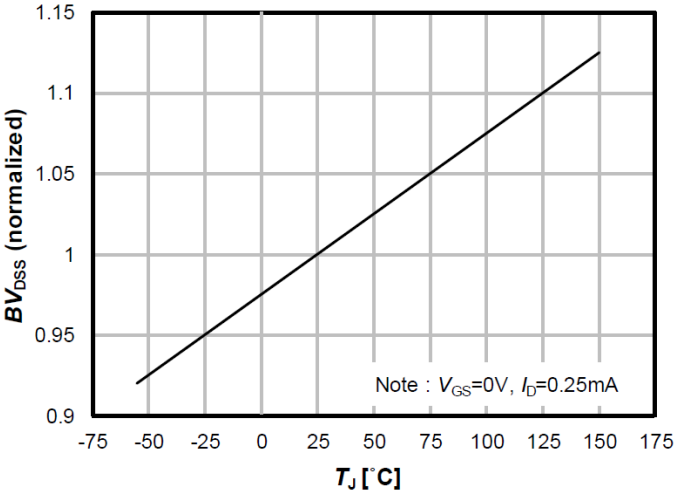


Figure 6. Breakdown Voltage with Temperature

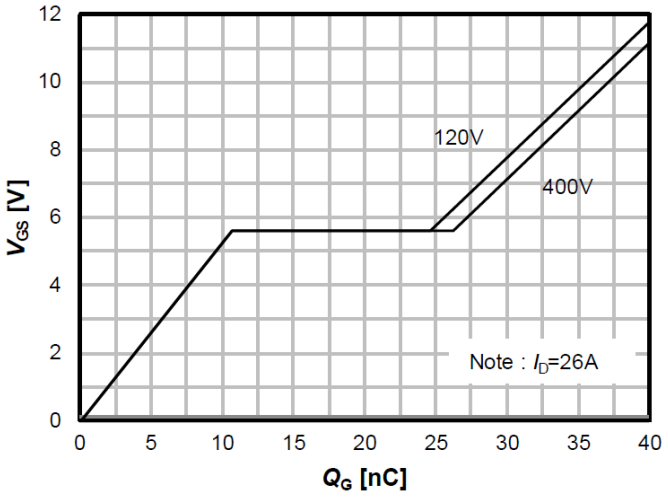


Figure 7. Gate Charge

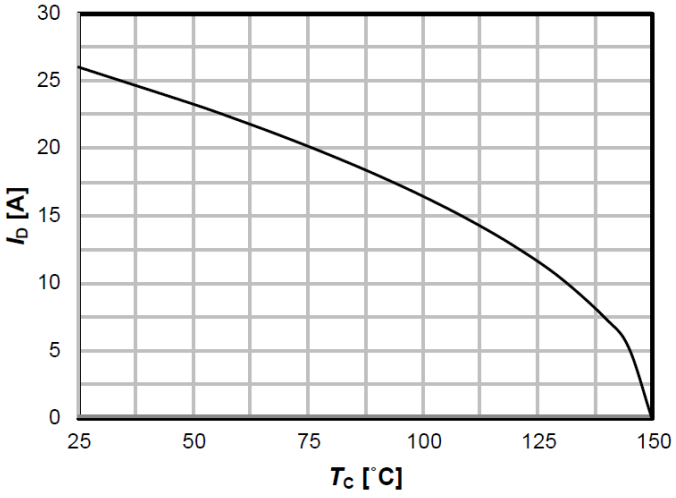


Figure8. Maximum Drain Current

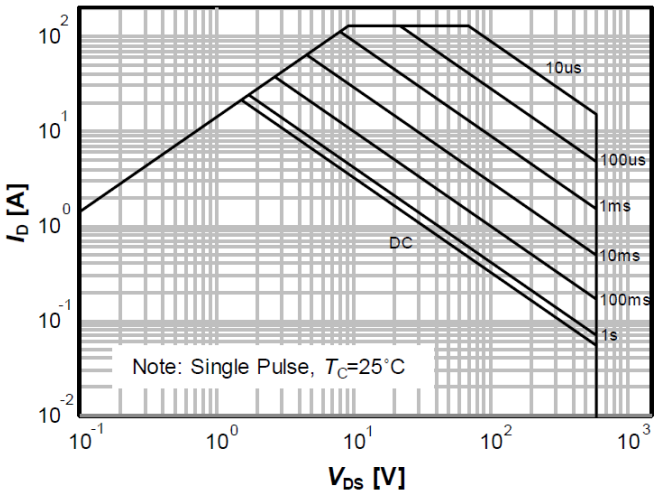


Figure 9. Safe Operating Area

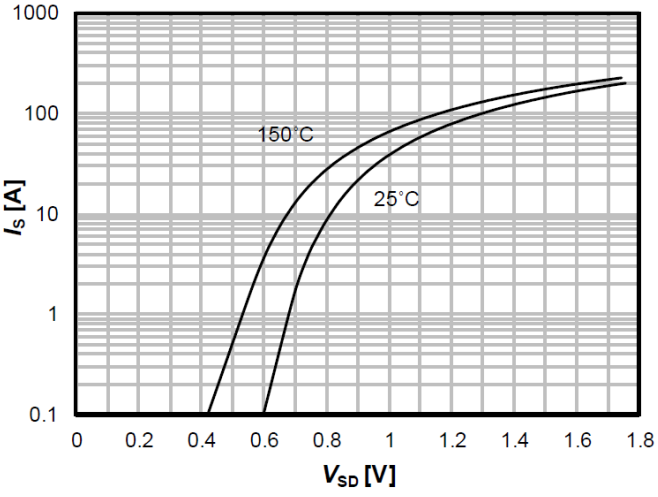


Figure 10. Body Diode Characteristics

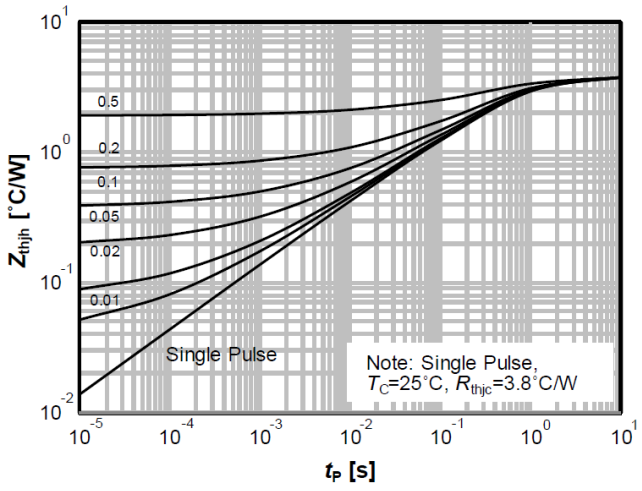


Figure 11. Maximum Transient Thermal Characteristics

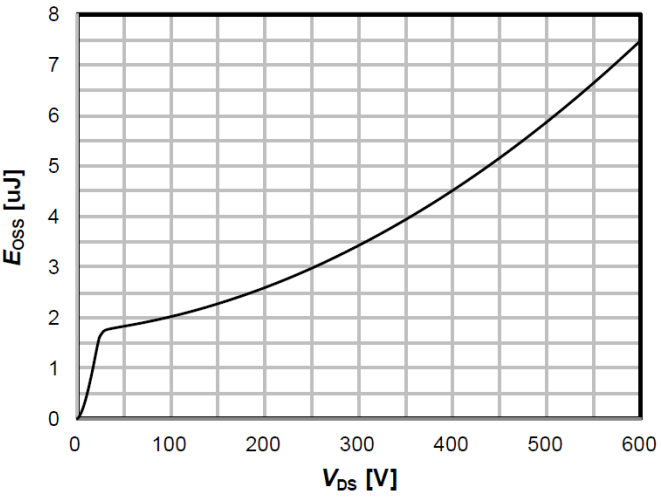
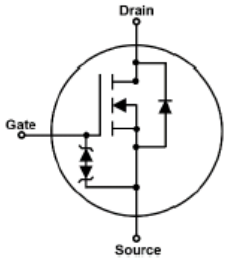
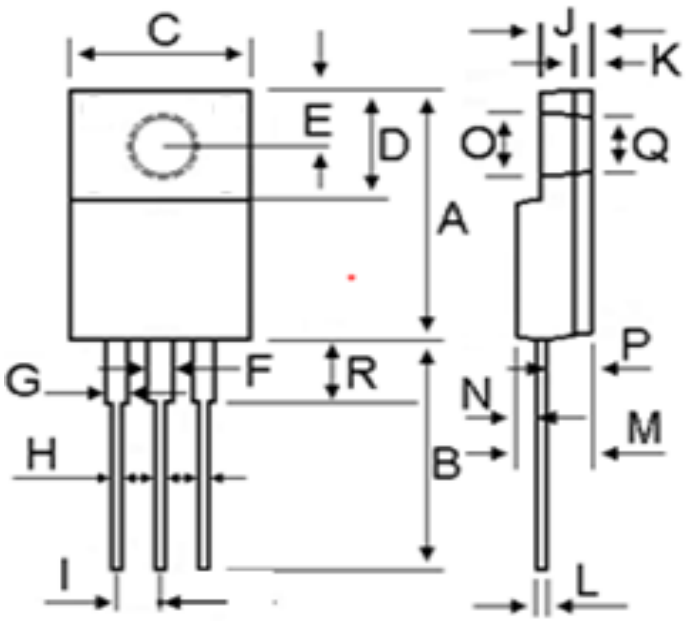


Figure 12. Coss Stored Energy

·Circuit diagram



·Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	14.80	16.10
B	12.65	14.40
C	9.70	10.40
D	4.60	6.80
E	2.50	3.50
F	0.90	1.70
G	0.90	1.70
H	0.50	0.90
I	2.40	2.70
J	2.34	3.30
K	0.55	1.30
L	0.36	0.80
M	4.20	4.90
N	1.10	1.80
O	2.90	3.50
P	2.30	3.15
Q	2.90	3.50
R	2.45	4.85

Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life (atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)