■ PRODUCT CHARACTERISTICS
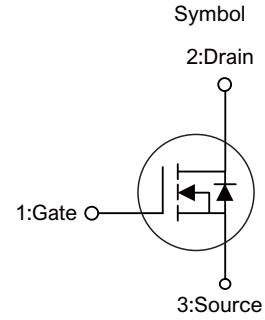
V_{DSS}	20V
$R_{DS(ON)}$Typ(@V_{GS}=2.5V)	13mΩ
$R_{DS(ON)}$Typ(@V_{GS}=4.5V)	8mΩ
ID	30A

Symbol

2:Drain

1:Gate

3:Source

■ APPLICATIONS

Power managerment in telecom.,industrial automation,CE
Current switching in DC/DC-AC/DC sub-systems
Motor driving in power tool
E-vehicle,robotics

■ FEATURES

*Low gate charge
*UIS tested,100% Rg tested
*Pb-free lead plating
*Halogen-free and RoHS-compliant

TO-252   TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT30N02D	TO-252	2500 pieces/Reel
N/A	MOT30N02C	TO-251	70 pieces/Tube

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

Parameter		Symbol	Ratings	Unit
Drain-to-source voltage		V_{DSS}	20	V
Gate-to-source voltage		V_{GSS}	±12	V
Continuous drain	T_C=25°C	I_D	30	A
	T_C=100°C	I_D	21	A
Pulsed drain current		I_{DM}	100	A
Avalanche energy		E_{AS}	150	mJ
Power dissipation		P_D	40	W
Junction & storage temperature range		T_J,T_{STG}	~55 to +150	°C

■ THERMAL PERFORMANCE

Parameter	Symbol	Ratings	Unit
Thermal resistance, Junction-to-case	$R_{\theta JC}$	3.8	°C/W

■ ELECTRICAL CHARACTERISTICS(T_C = 25°C, unless otherwise specified)

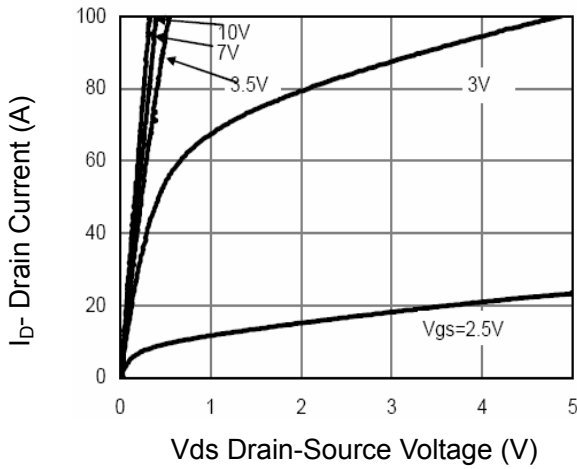| Parameter	Symbol	Conditions		Min	Typ	Max	Unit
STATIC PARAMETERS							
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D =250uA		20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V,V_{GS}=0V		-	-	1	uA
			T_J =55°C	-	-	5	uA
Gate-body leakage current	I_{GSS}	V_{GS}= ±12V,V_{DS}=0V		-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS} ,I_D=250uA		0.5	-	1.2	V
Static drain-source on-resistance	$V_{GS(th)}$	V_{GS}=4.5V,I_D=20A		-	8	12	mΩ
		V_{GS}=2.5V ,I_D=15A		-	13	15	mΩ
Forward transconductance	g_{FS}	V_{DS}=5V,I_D=5A		-	-	50	S
Diode forward voltage	V_{SD}	I_S=1A, V_{GS}=0V		-	0.75	1	V
Diode continuous current	I_S	T_C=25°C		-	-	30	A
DYNAMIC PARAMETERS							
Input capacitance	C_{ISS}	V_{GS}=0V,V_{DS}= 10V, f=1MHz		-	900	-	pF
Ouput capacitance	C_{OSS}			-	150	-	pF
Reverse transfer capacitance	C_{rss}			-	130	-	pF
Gate resistance	R_g	V_{GS}=0V,V_{DS}=0V, f=1MHz		-	1.5	-	Ω
SWITCHING PARAMETERS							
Total charge	Q_g	V_{GS}=4.5V V_{DS}=10V,I_D=20A		-	23.5	-	nC
Gate source charge	Q_{gs}			-	2.8	-	nC
Gate drain charge	Q_{gd}			-	5.75	-	nC
Turn-on delay time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=10V R_L =0.5Ω,R_{GEN} =2.7Ω		-	4.5	-	nS
Turn-on rise time	t_r			-	9.2	-	nS
Turn-off delay time	$t_{D(off)}$			-	18.7	-	nS
Turn-off fall time	t_f			-	3.3	-	nS
Body-diode reverse recovery time	t_{rr}	I_F=20A, dI_F/dt =100A/us		-	18	-	nS
Body-diode reverse recovery charge	Q_{rr}	I_F=20A, dI_F/dt =100A/us		-	9.5	-	nC

■ TYPICAL CHARACTERISTICS
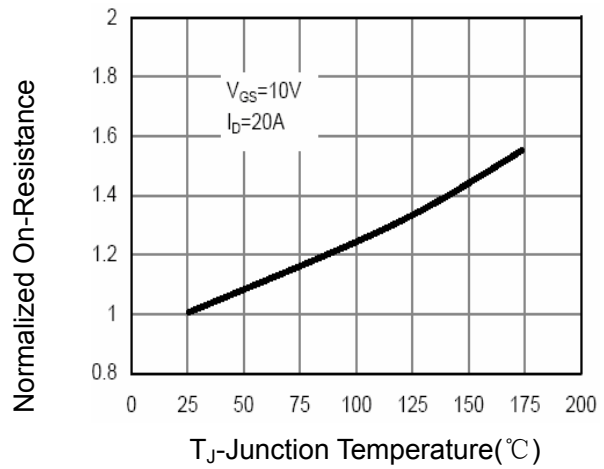
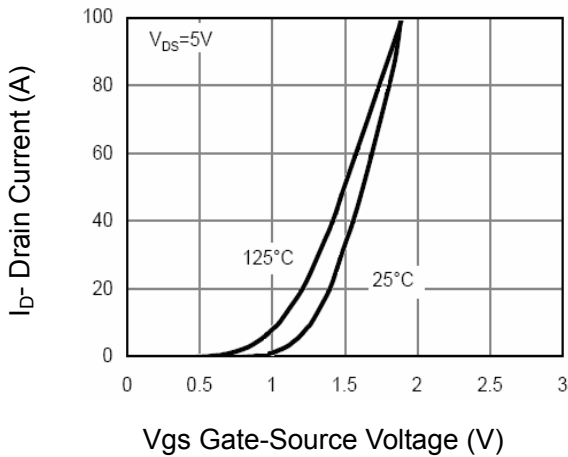**Figure 1 Output Characteristics**

Figure 2 Rdson-Junction Temperature

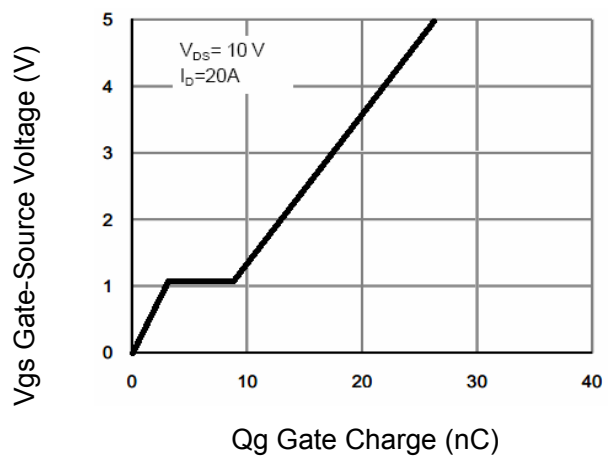**Figure 3 Transfer Characteristics**
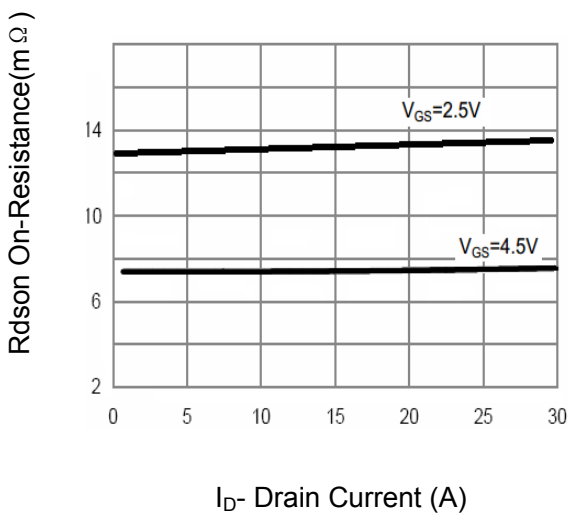
Figure 4 Gate Charge
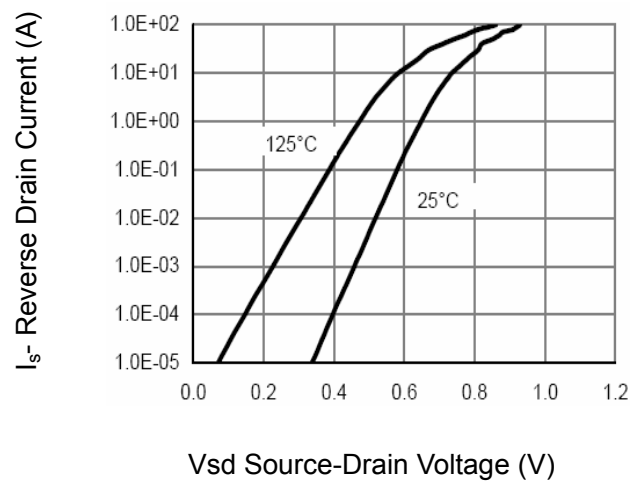
Figure 5 Rdson- Drain Current

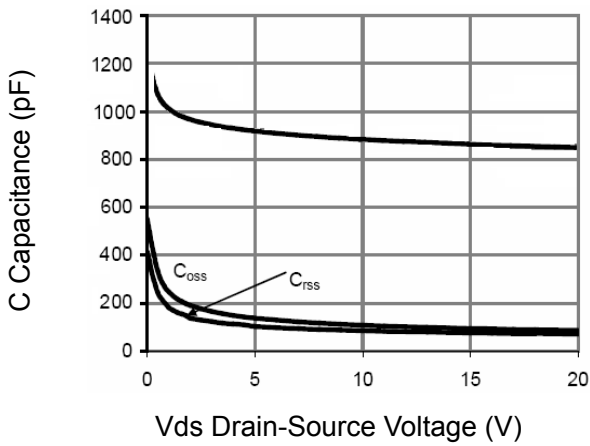**Figure 6 Source- Drain Diode Forward**

■ TYPICAL CHARACTERISTICS(Cont.)

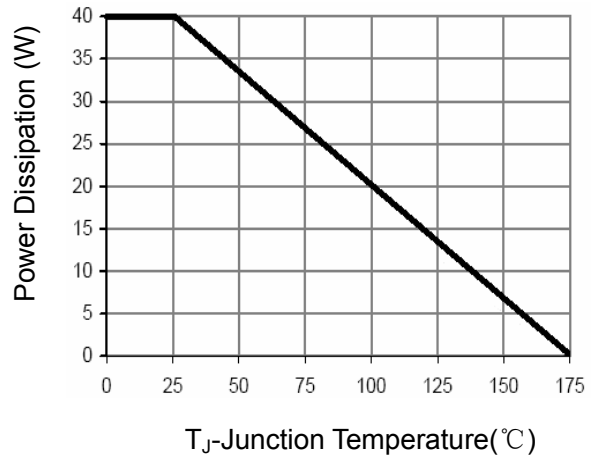**Figure 7 Capacitance vs Vds**

Figure 8 Power De-rating

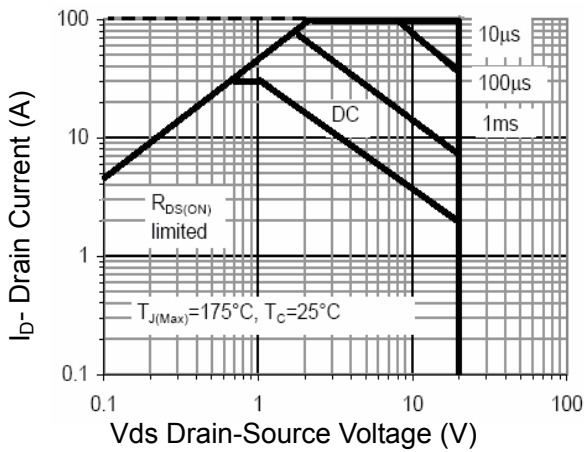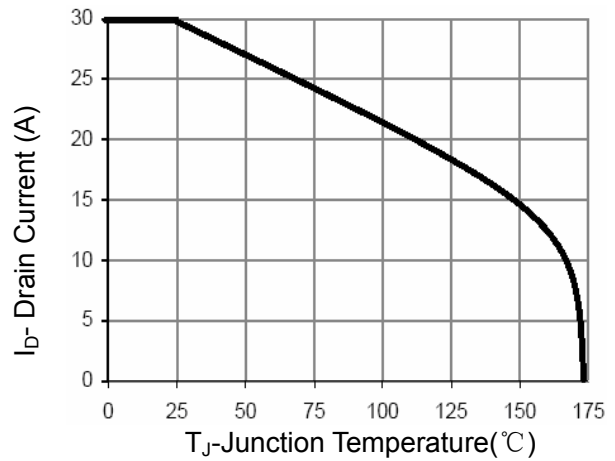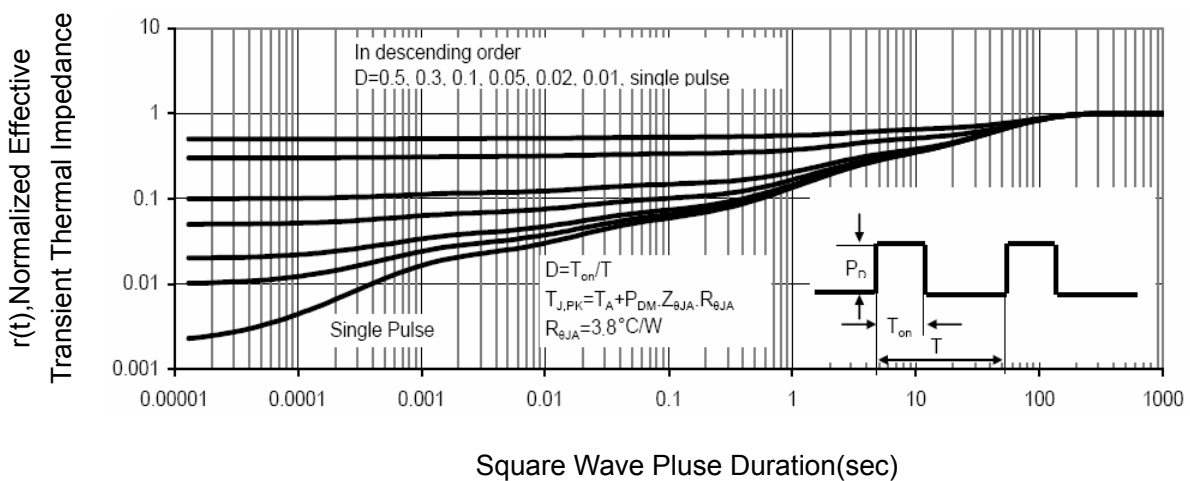**Figure 9 Safe Operation Area**

Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

Square Wave Pluse Duration(sec)

■ TO-251 PACKAGE OUTLINE DIMENSIONS

■ TO-252 PACKAGE OUTLINE DIMENSIONS

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