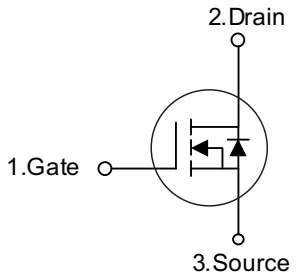
■ PRODUCT CHARACTERISTICS

VDSS	30V
R_{DS}(on)typ(@V_{GS} =10 V)	2.5mΩ
R_{DS}(on)Typ(@V_{GS} =4.5 V)	3.5mΩ
ID	150A

Symbol



TO-220

■ FEATURES

High density cell design for ultra low Rdson
Fully characterized avalanche voltage and current
Good stability and uniformity with high E_{AS}
Excellent package for good heat dissipation
Special process technology for high ESD capability

■ APPLICATION

Power switching application
Hard switched and high frequency circuits
Uninterruptible power supply

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT150N03A	TO-220	50 pieces/Tube

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	150	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	105	A
Pulsed Drain Current	I_{DM}	600	A
Maximum Power Dissipation	P_D	130	W
Derating factor		0.87	W/℃
Single pulse avalanche energy	E_{AS}	1700	mJ
Repetitive avalanche energy	E_{AR}	400	mJ
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.15	℃/W

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30	35	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.2	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	2.5	3.5	mΩ
		V_{GS}=4.5V, I_D=20A	-	3.5	4.8	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V,I_D=20A	12	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=15V,V_{GS}=0V, F=1.0MHz	-	6297	-	PF
Output Capacitance	C_{oss}		-	866	-	PF
Reverse Transfer Capacitance	C_{rss}		-	672	-	PF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V,I_D=20A, V_{GS}=10V,R_G=2.5Ω	-	26	-	nS
Turn-on Rise Time	t_r		-	24	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	91	-	nS
Turn-Off Fall Time	t_f		-	39	-	nS
Total Gate Charge	Q_g	V_{DS}=15V,I_D=20A, V_{GS}=10V	-	114	-	nC
Gate-Source Charge	Q_{gs}		-	22	-	nC
Gate-Drain Charge	Q_{gd}		-	19	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=20A	-		1.2	V
Diode Forward Current	I_S		-	-	150	A
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF = 20A di/dt = 100A/μs	-	42	-	nS
Reverse Recovery Charge	Qrr		-	39	-	nC

■ TYPICAL CHARACTERISTICS

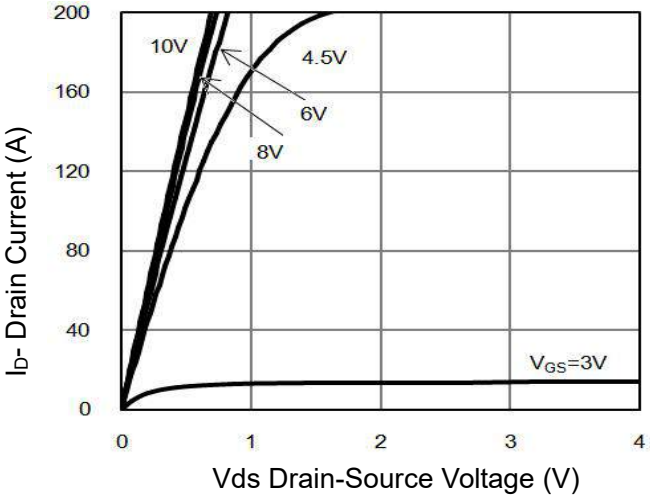


Figure 1 output characteristics

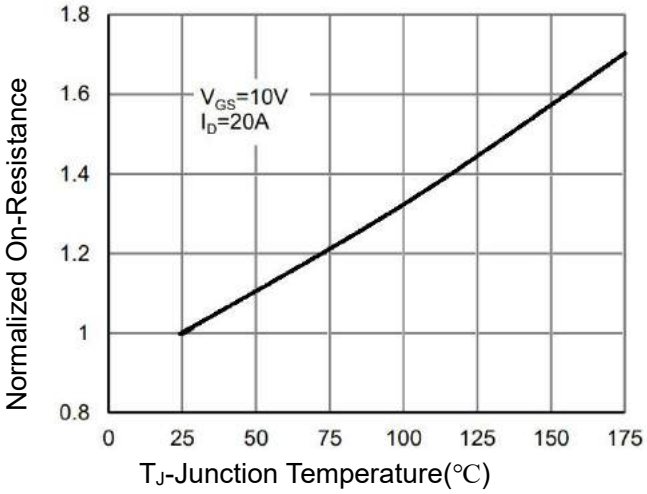


Figure 2 rdson-junction temperature

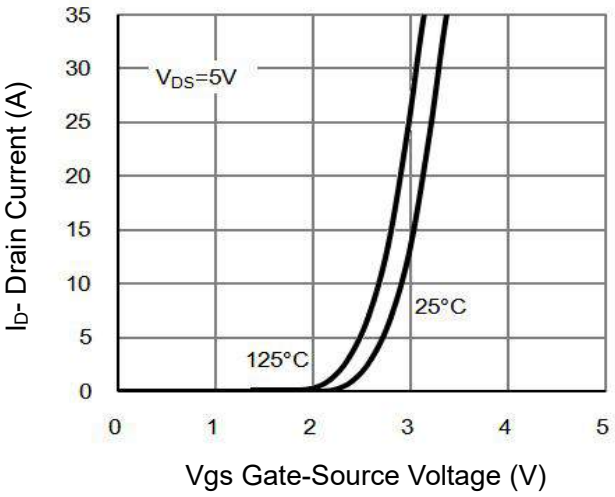


Figure 4 transfer characteristics

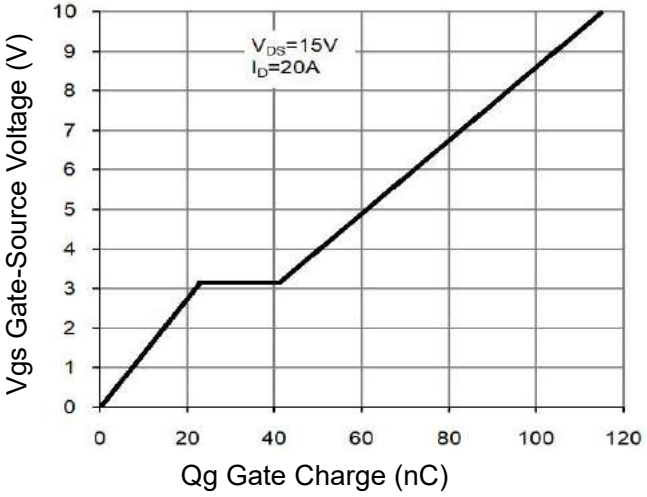


Figure 4 gate charge

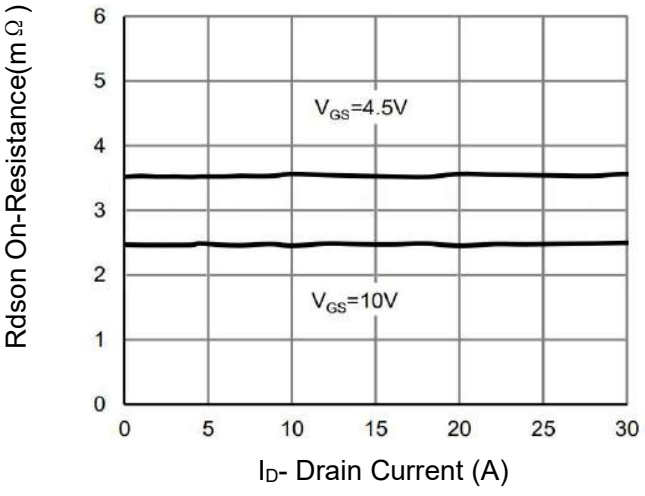


Figure 5 rdson-drain current

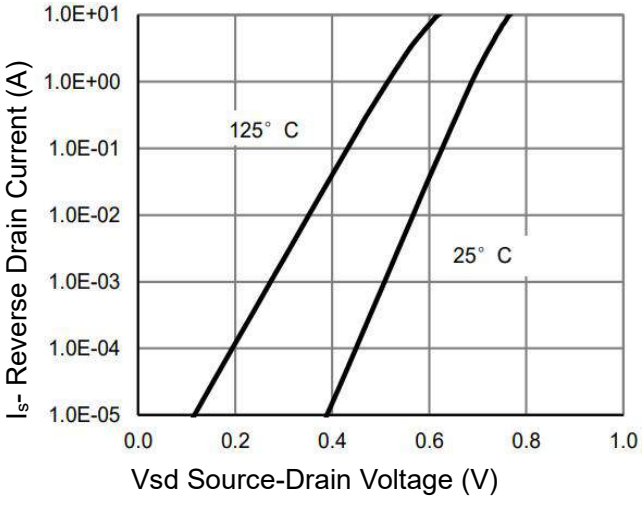


Figure 6 source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

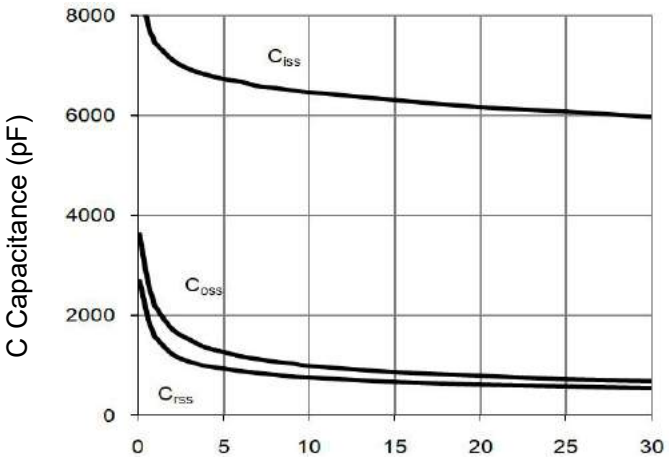


Figure 7 capacitance vs vds

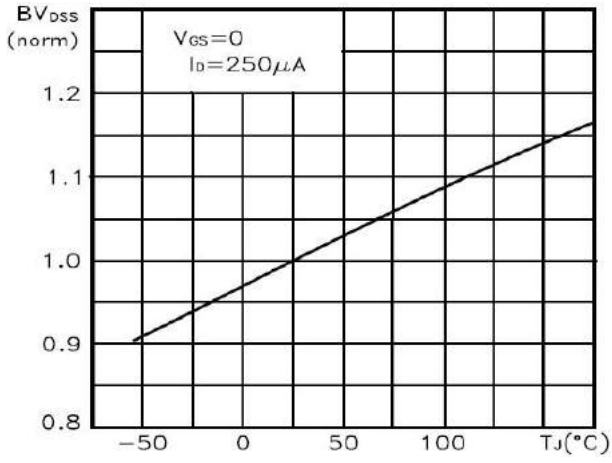


Figure 8 bvdss vs junction temperature

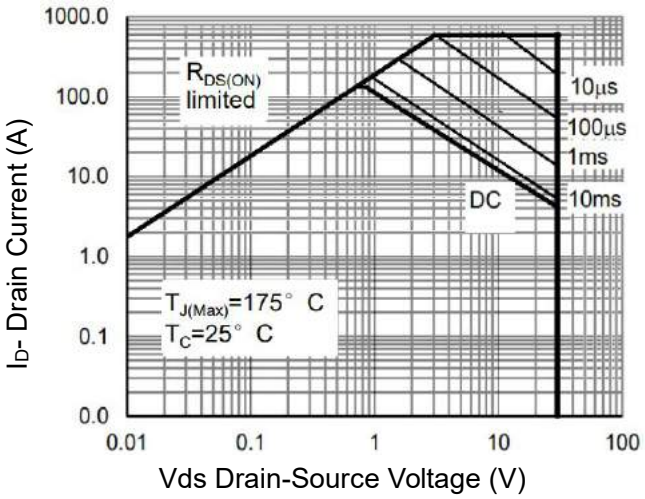


Figure 9 safe operation area

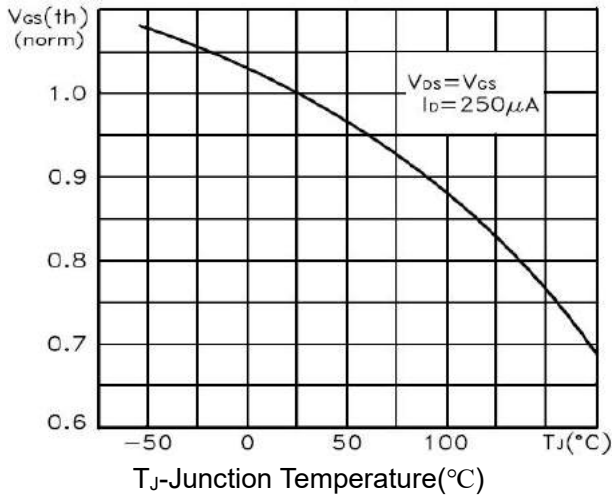


Figure 10 vgs vs junction temperature

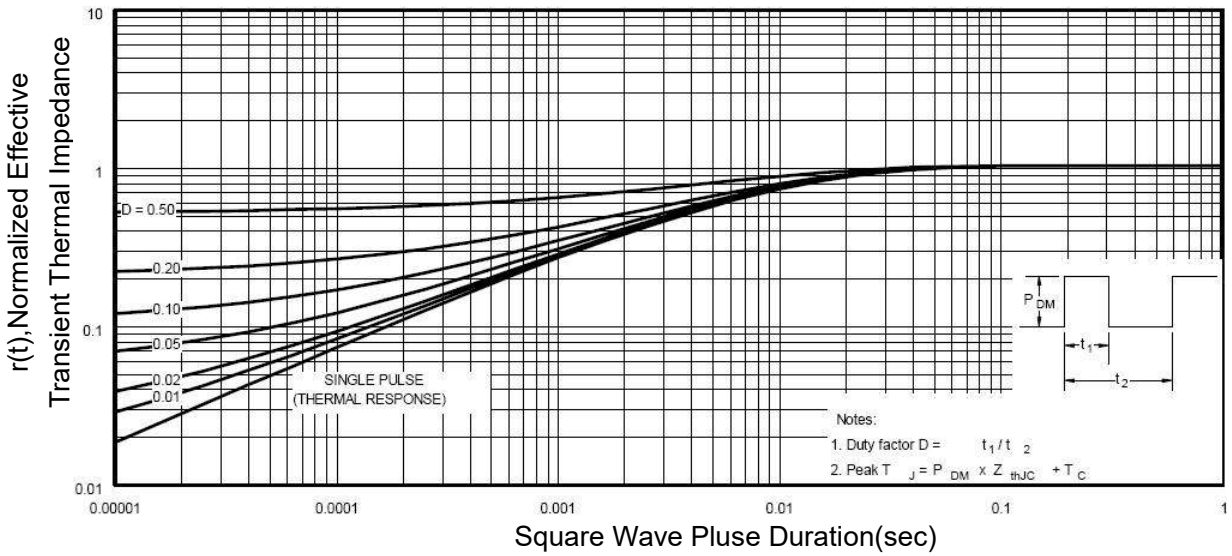


Figure 11 normalized maximum transient thermal impedance

■ TO-220-3L PACKAGE OUTLINE DIMENSIONS