

PRODUCT CHARACTERISTICS

V_{DSS}	500V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	0.17 Ω
Q_g @typ	78nC
I_D	25A

APPLICATIONS

- * High efficiency switch mode power supplies
- * Electronic lamp ballasts based on half bridge
- * LED power supplies

FEATURE

- * High Switching Speed
- * Improved dv/dt capability

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT25N50HAF	TO-220F	50 pieces/Tube

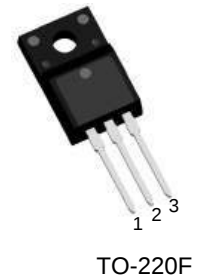
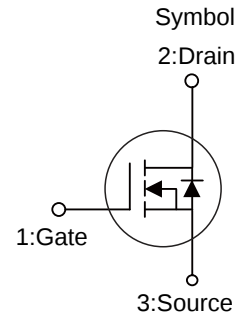
ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	500	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current Continuous(@ $V_{GS}=10V$, $T_A=25^{\circ}C$)	I_D	25	A
Drain Current Pulsed	I_{DM}	100	A
Avalanche Energy *	E_{AS}	3600	mJ
Peak Diode Recovery dv/dt	dv/dt	5.0	V/ns
Power Dissipation	P_D	48	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Ambient	R_{thJA}	62.5	$^{\circ}C/W$
Junction to Case	R_{thJC}	2.6	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C$, $V_{DD}=50V$, $V_G=10V$, $L=10mH$, $R_g=25\Omega$



■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	500	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =500V, V _{GS} =0V	-	-	1	μA
Gate to Source Forward Leakage	I _{GSS(F)}	V _{DS} =0V, V _{GS} =+30V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{DS} =0V, V _{GS} =-30V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =12.5A	-	0.17	0.21	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2	-	4	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	1.7	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	-	11	-	S
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V f=1.0MHz	-	4400	-	pF
Output Capacitance	C _{oss}		-	275	-	pF
Reverse Transfer Capacitance	C _{rss}		-	2.1	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =25 A, V _{DS} =250V R _G =10Ω ,V _{GS} =10V	-	44	-	ns
Rise Time	t _r		-	70	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	85	-	ns
Fall Time	t _f		-	50	-	ns
Total Gate Charge	Q _g	I _D =25 A, V _{DS} =250V V _{GS} =10V	-	78	-	nC
Gate to Source Charge	Q _{gs}		-	19	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	22	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _S		-	-	25	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	100	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.68	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =25A, T _J =25 °C	-	372	-	ns
Reverse Recovery Charge	Q _{rr}	dI /dt=100A/μs	-	4900	-	nC

■ TYPICAL CHARACTERISTICS

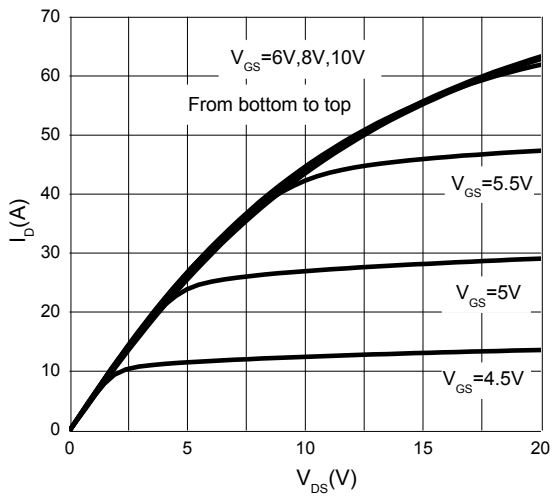


Figure 1. Typical Output Characteristics

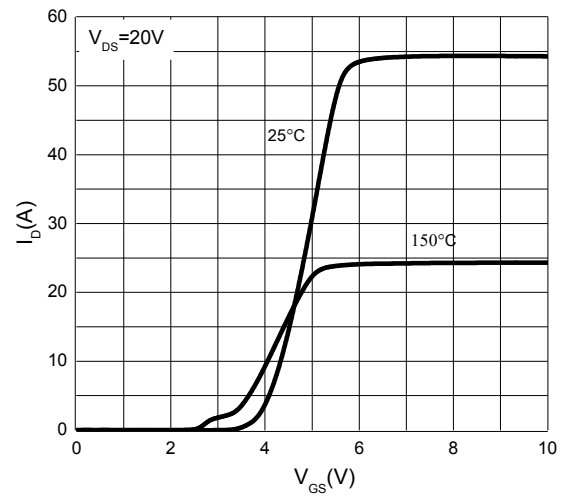


Figure 2. Transfer Characteristics

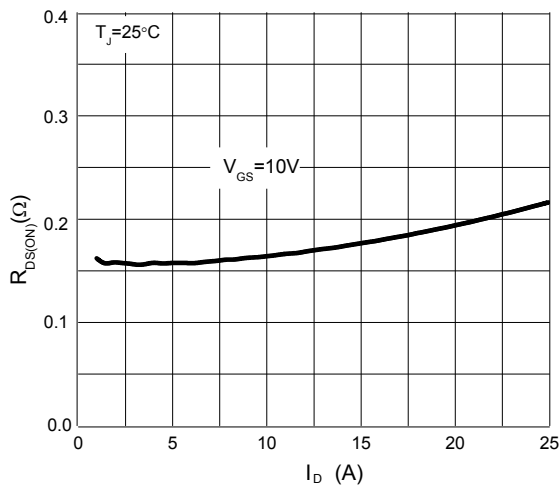


Figure 3. On-Resistance vs. Drain Current

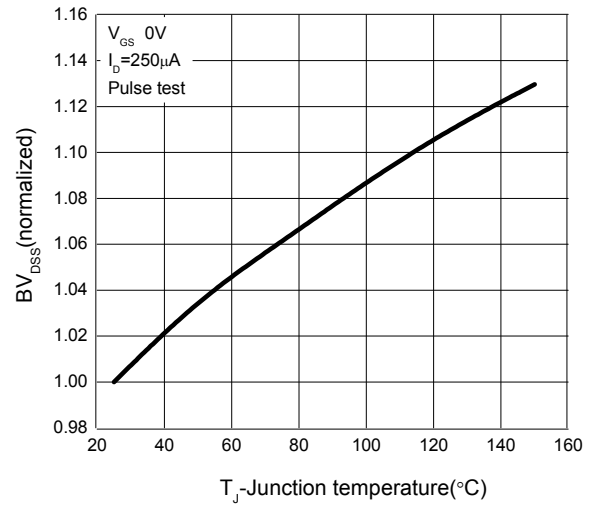


Figure 4. Breakdown Voltage vs. Temperature

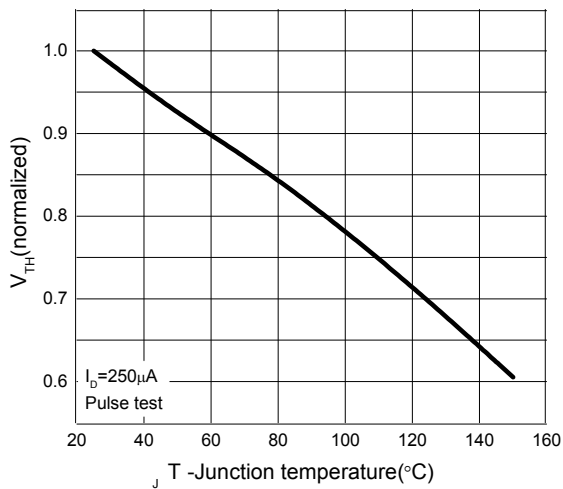


Figure 5. Threshold Voltage vs. Temperature

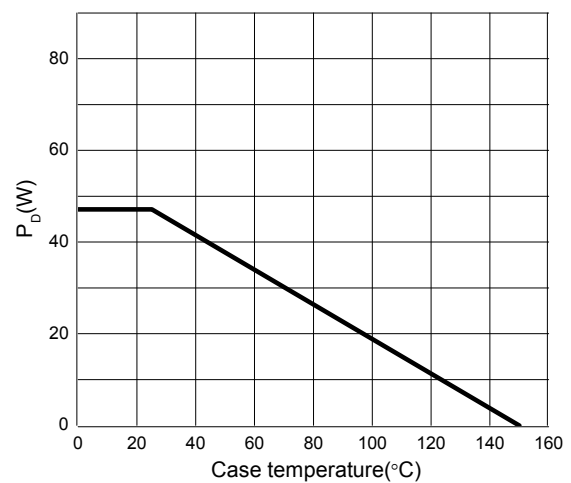


Figure 6. Power Dissipation vs. Temperature

TYPICAL CHARACTERISTICS(Cont.)

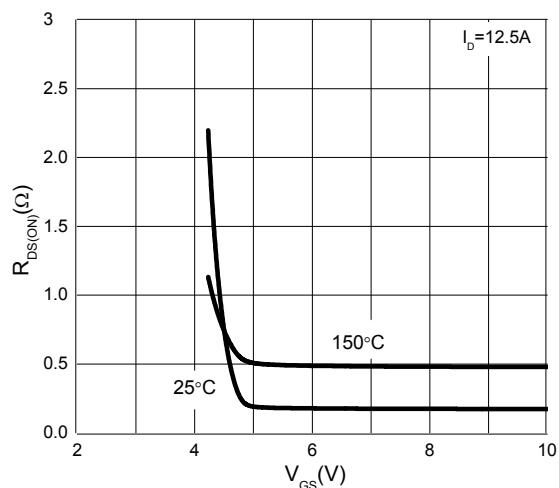


Figure 7. Rds(on) vs. Gate Voltage

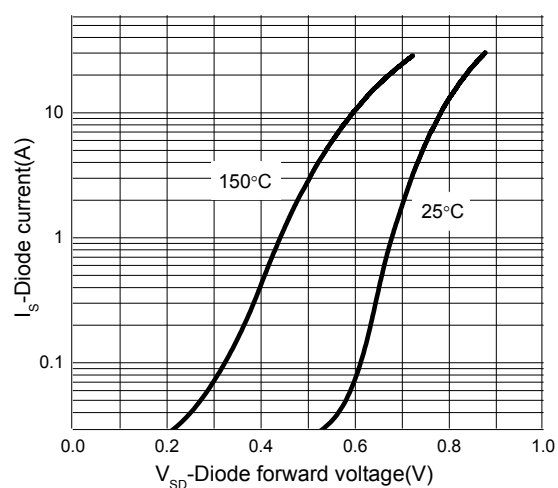


Figure 8. Body-Diode Characteristics

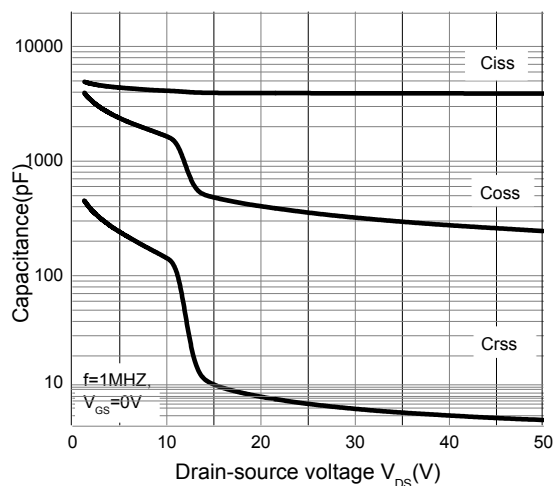


Figure 9. Capacitance Characteristics

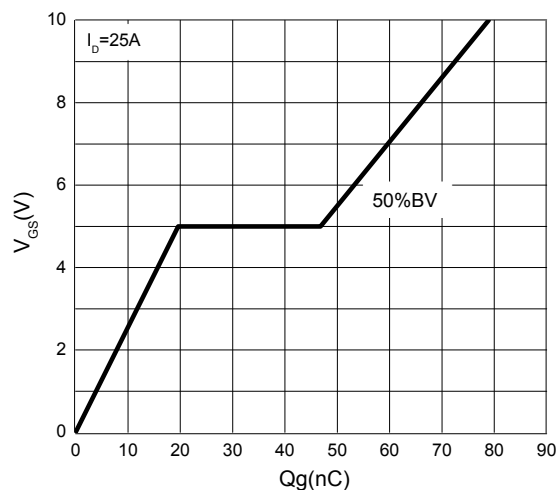


Figure 10. Gate Charge Characteristics

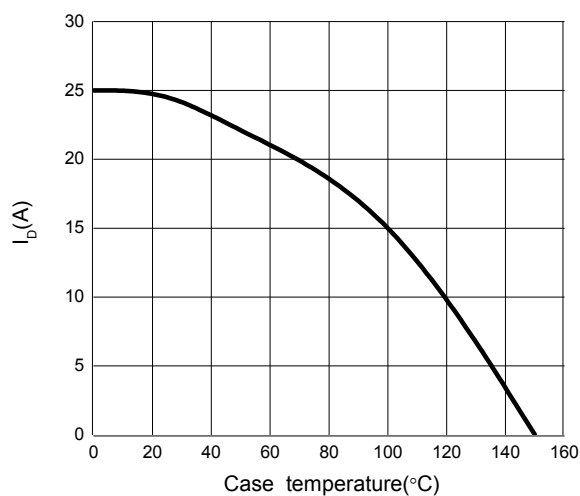


Figure 11. Continuous Drain Current vs. Temperature

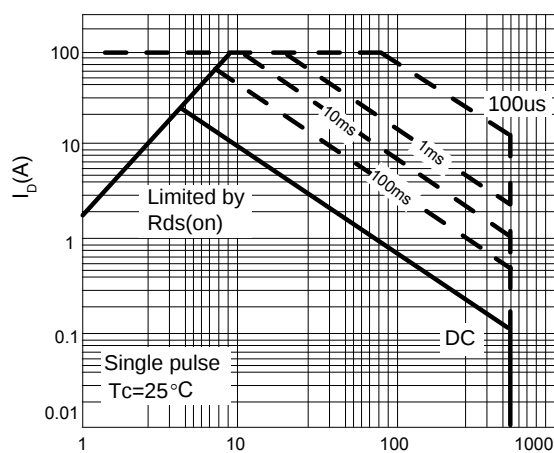


Figure 12. Safe Operating Area

Technical drawing of a mechanical part, showing front, top, and side views with dimensions.

Front View Dimensions:

- Overall width: 10.06 ± 0.15
- Overall height: 15.87 ± 0.15
- Top section height: 3.30
- Bottom section height: 4.90
- Central circular feature diameter: 8.0
- Four small circular features (holes) diameter: $3 \times \phi 1.50$
- Distance from top edge to center of small holes: 1.80
- Distance from center of small holes to center of large hole: 6.10 ± 0.1
- Distance from center of large hole to bottom edge: 1.80 ± 0.1
- Bottom section width: 8.0
- Bottom section height: 12.93 ± 0.3
- Bottom section width: $3 \times 1.38 \pm 0.1$
- Bottom section height: 9.75
- Bottom section width: 2.54
- Bottom section height: 3.18
- Bottom section width: 0.80
- Bottom section height: 2.54

Top View Dimensions:

- Overall width: 10.06 ± 0.15
- Overall height: 7.00 ± 0.15
- Distance from top edge to center of small holes: 1.80
- Distance from center of small holes to center of large hole: 6.10 ± 0.1
- Distance from center of large hole to bottom edge: 1.80 ± 0.1
- Bottom section width: 8.0
- Bottom section height: 12.93 ± 0.3
- Bottom section width: $3 \times 1.38 \pm 0.1$
- Bottom section height: 9.75
- Bottom section width: 2.54
- Bottom section height: 3.18
- Bottom section width: 0.80
- Bottom section height: 2.54

Side View Dimensions:

- Overall width: 4.70 ± 0.1
- Overall height: 6.68 ± 0.1
- Distance from top edge to center of small holes: 2.54 ± 0.15
- Distance from center of small holes to center of large hole: 6.10 ± 0.1
- Distance from center of large hole to bottom edge: 1.80 ± 0.1
- Bottom section width: 8.0
- Bottom section height: 12.93 ± 0.3
- Bottom section width: $3 \times 1.38 \pm 0.1$
- Bottom section height: 9.75
- Bottom section width: 2.54
- Bottom section height: 3.18
- Bottom section width: 0.80
- Bottom section height: 2.54