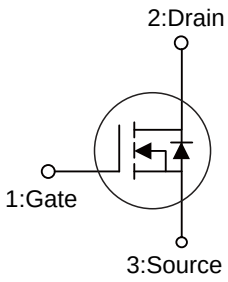
■ PRODUCT CHARACTERISTICS

V_{DSS}	650V
$R_{DS(ON)}$Typ(@V_{GS}=10V)	32mΩ
Qg@typ	167.3nC
I_D	84A

Symbol



■ APPLICATIONS

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

TO-247

■ FEATURE

* High Switching Speed
* Improved dv/dt capability

■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT65R040N	TO-247	30 pieces/Tube

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage	V_{GSS}	±30	V
Drain Current Continuous(@V_{GS}=10V,T_C=25°C)	I_D	84	A
Drain Current Pulsed	I_{DM}	252	A
Avalanche Energy *	E_{AS}	1620	mJ
Power Dissipation	P_D	694	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	0.18	°C/W
Junction-to-Ambient, minimal Footprint [1]	R_{thJA}	62	°C/W

Note: * EAS condition: T_J=25°C,V_{DD}=50V,V_G=10V,L=10mH,R_g=25Ω

[1] The value of RthJA is measured by placing the device in a still air box which is one cubic foot.

■ ELECTRICAL CHARACTERISTICS (T_C=25°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	650	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=650V,V_{GS}=0V	-	-	10	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=35A	-	32	41	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	3.0	-	5.0	V
Dynamic characteristics						
Gate capacitance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	4.2	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=5.5A	-	20	-	S
Input Capacitance	C_{iss}	V_{DS}=100V,V_{GS}=0V f=250kHz	-	8513	-	pF
Output Capacitance	C_{oss}		-	275	-	pF
Reverse Transfer Capacitance	C_{rss}		-	4.6	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	I_D=35A, V_{DS}=400V R_G=10Ω ,V_{GS}=10V	-	293.6	-	ns
Rise Time	t_r		-	31.7	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	258.6	-	ns
Fall Time	t_f		-	8.6	-	ns
Total Gate Charge	Q_g	I_D=35A, V_{DS}=520V V_{GS}=10V	-	167.3	-	nC
Gate to Source Charge	Q_{gs}		-	49.1	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	62.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	84	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	252	A
Diode Forward Voltage	V_{SD}	I_{SD}=35A, V_{GS}=0V	-	0.83	1.2	V
Reverse Recovery Time	t_{rr}	V_{DS}=400V, I_D=35A, dI_F/dt=100 A/μs	-	194.5	-	ns
Reverse Recovery Charge	Q_{rr}		-	1916.3	-	nC

Electrical Characteristics Diagrams

Fig 1: Output Characteristics

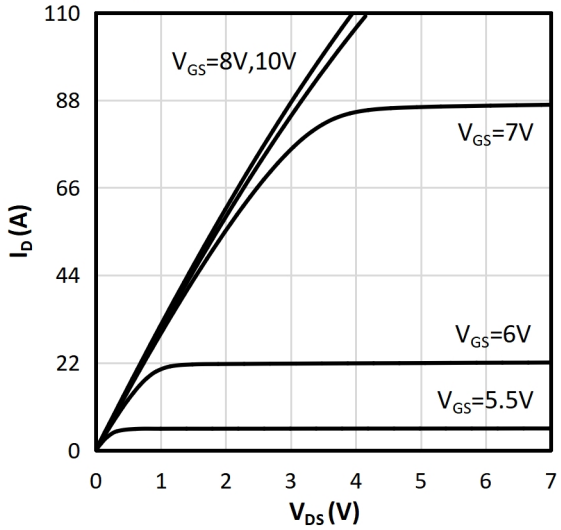


Fig 2: Transfer Characteristics

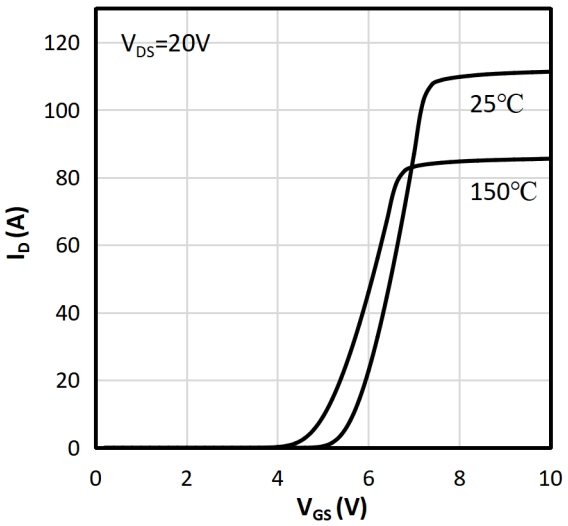


Fig 3: Rds(on) vs Drain Current

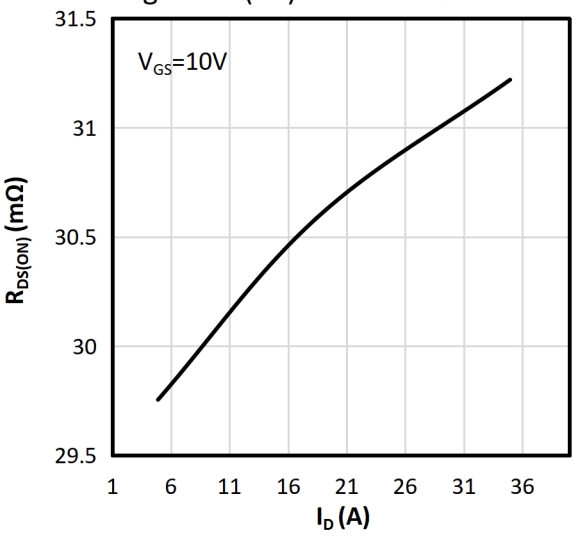


Fig 4: Rds(on) vs. Temperature

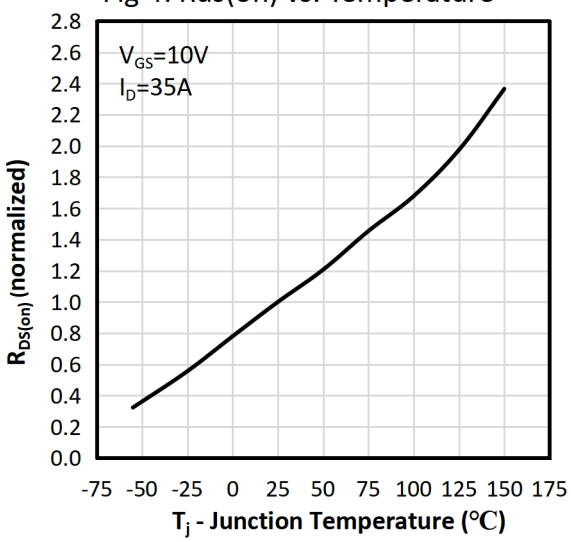


Fig 5: Breakdown Voltage vs. Temperature

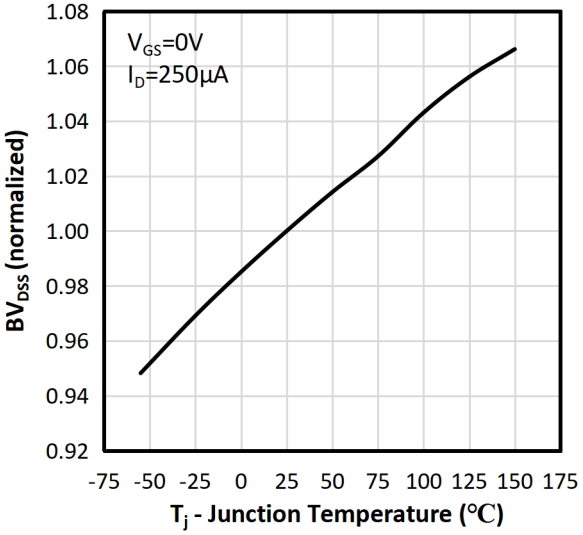


Fig 6: Threshold voltage vs. Temperature

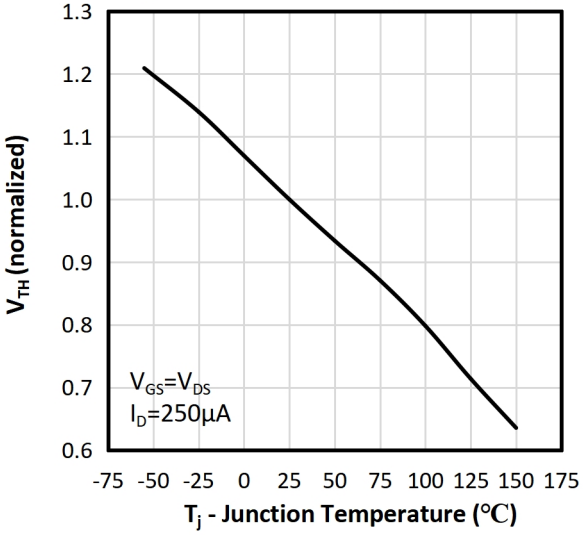


Fig 7: Body-Diode Characteristics

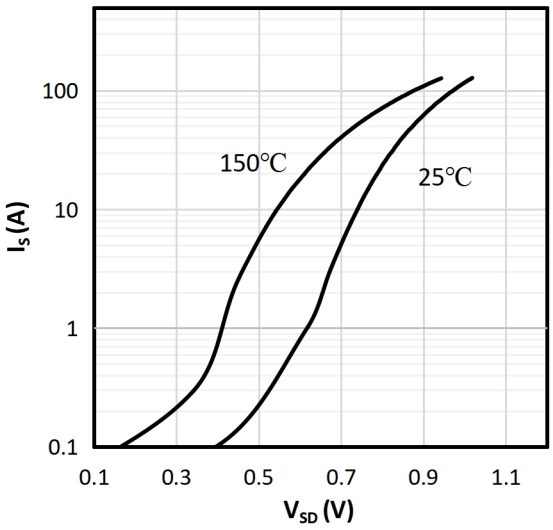


Fig 8: Capatitance Characteristics

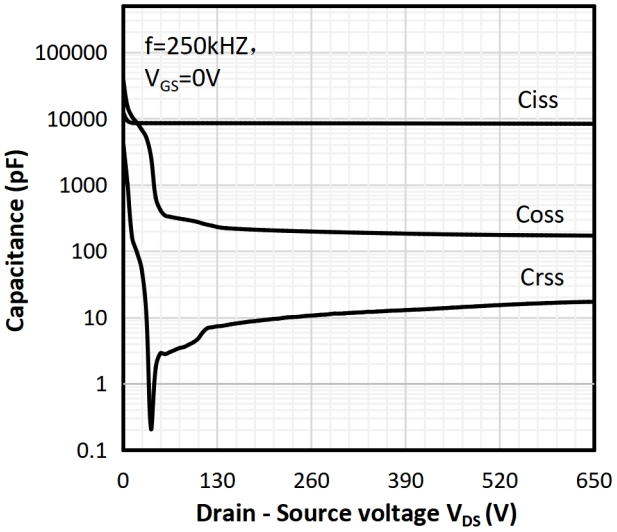


Fig 9: Gate charger Characteristics

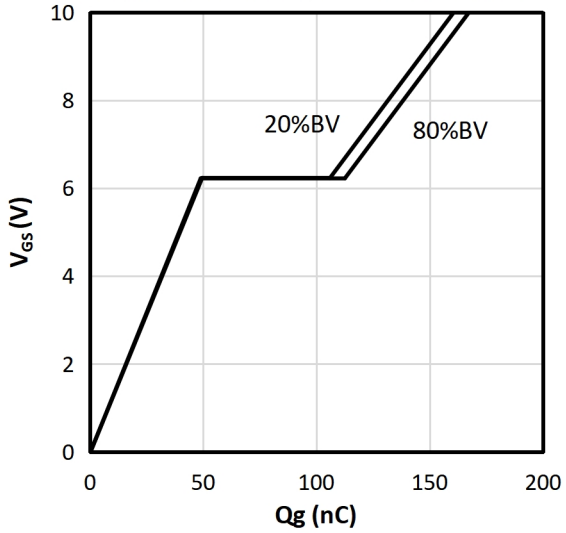


Fig 10: Drain Current Derating

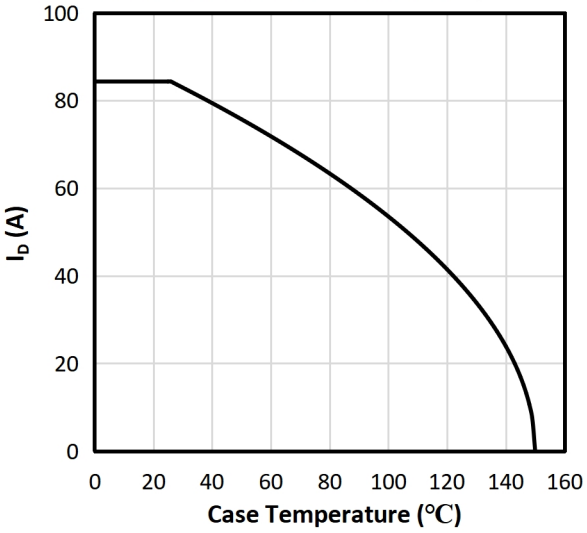


Fig 11: Power Dissipation vs.Temperature

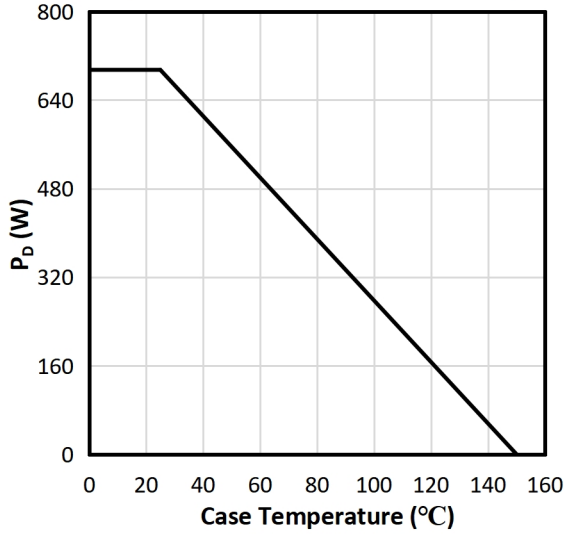
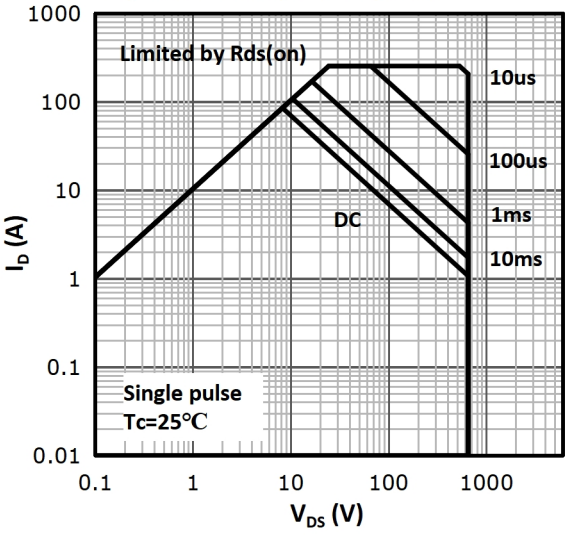


Fig 12: Safe Operating Area



■ TO-247 PACKAGE OUTLINE DIMENSIONS