

PRODUCT CHARACTERISTICS

V_{DSS}	30V
$R_{DS(ON) Typ(@V_{GS}=10V)}$	3.1m Ω
$R_{DS(ON) Typ(@V_{GS}=4.5V)}$	5.3m Ω
I_D	105A

APPLICATIONS

- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating



ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT3141AD	TO-252	2500 pieces/Reel

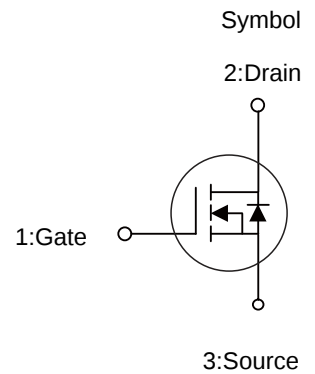
ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current Continuous($@V_{GS}=10V, T_A=25^{\circ}C$)	I_D	105	A
Drain Current Continuous($@V_{GS}=10V, T_A=100^{\circ}C$)	I_D	64	A
Drain Current Pulsed	I_{DM}	420	A
Avalanche Energy *	E_{AS}	240	mJ
Power Dissipation	P_D	76	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	1.64	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=24V, V_G=10V, L=0.5mH, R_g=25\Omega$

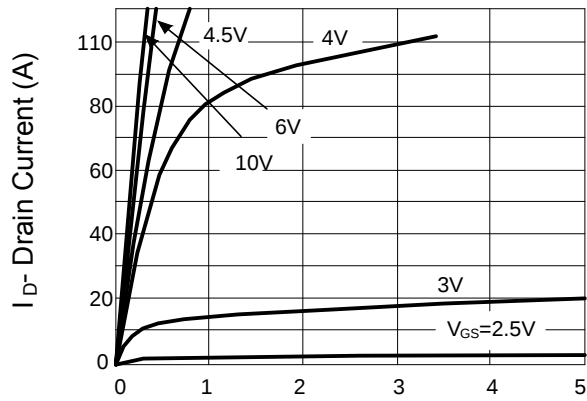


TO-252

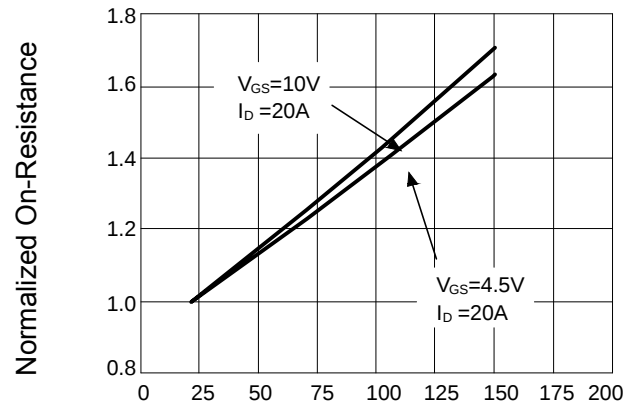
■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V,I _D =250μA	30	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =30V,V _{GS} =0V	-	-	1	μA
Gate to Source Forward Leakage	I _{GSS(F)}	V _{GS} =+20V,V _{DS} =0V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{GS} =-20V ,V _{DS} =0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =10V,I _D =20 A	-	3.1	4.1	mΩ
		V _{GS} =4.5V,I _D =20 A	-	5.3	6.5	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.4	2.5	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	2.8	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V,I _D =3A	-	12	-	S
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V f=1.0MHz	-	2000	-	pF
Output Capacitance	C _{oss}		-	251	-	pF
Reverse Transfer Capacitance	C _{rss}		-	216	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =20 A ,R _G =6Ω	-	10	-	ns
Rise Time	t _r		-	14	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	30	-	ns
Fall Time	t _f		-	6	-	ns
Total Gate Charge	Q _g	I _D =20 A, V _{DS} =15V V _{GS} =10V	-	55	-	nC
Gate to Source Charge	Q _{gs}		-	5.9	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	14.4	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	105	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	420	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.71	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _j =25 °C dI/dt=100A/μs	-	28	-	ns
Reverse Recovery Charge	Q _{rr}		-	55	-	nC

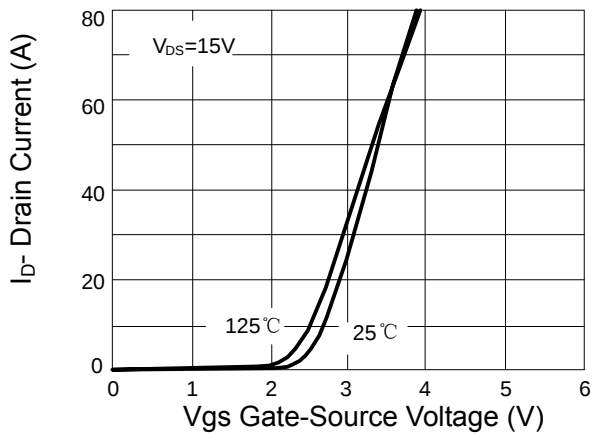
■ TYPICAL CHARACTERISTICS



V_{DS} Drain-Source Voltage (V)
Figure 1: Output characteristics



T_J-Junction Temperature(°C)
Figure 2: Rdson-junction temperature



V_{GS} Gate-Source Voltage (V)
Figure 3: Transfer characteristics

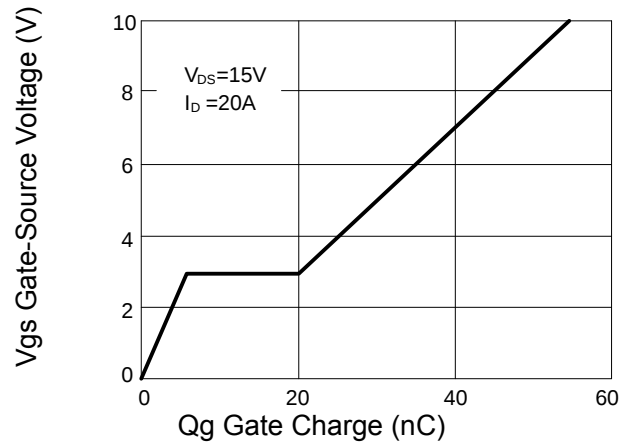


Figure 5: Gate charge

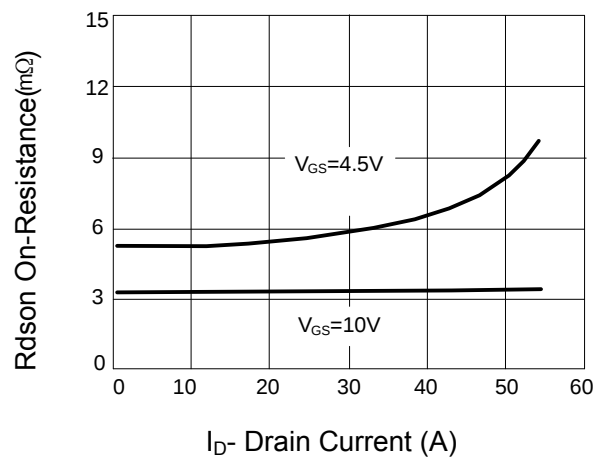


Figure 5: Rdson-drain current

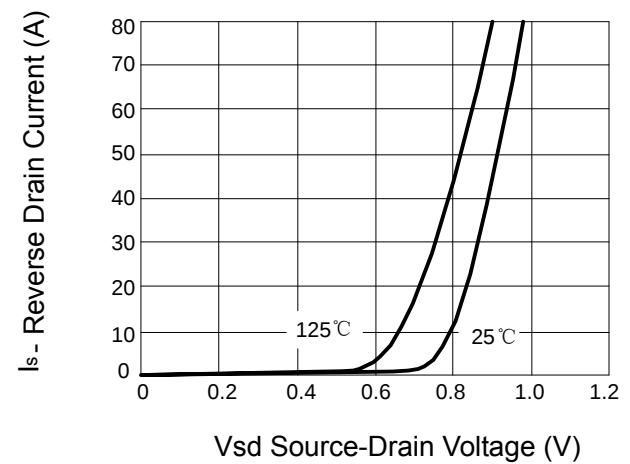


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

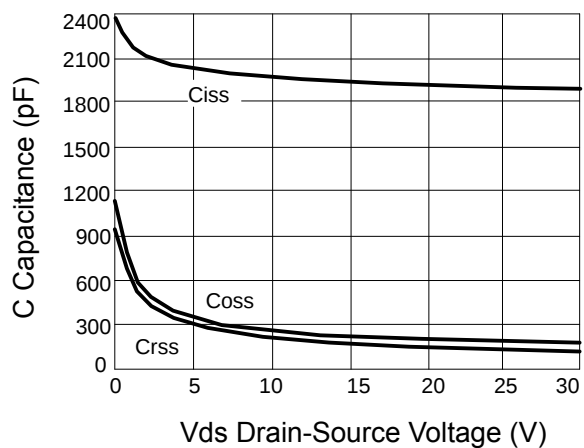


Figure 7: Capacitance vs vds

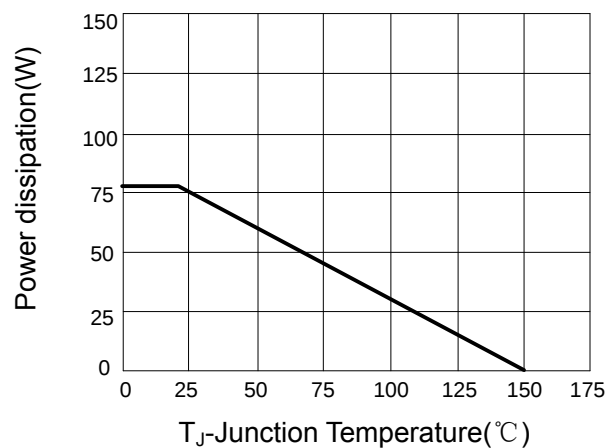


Figure 8: Power de-rating

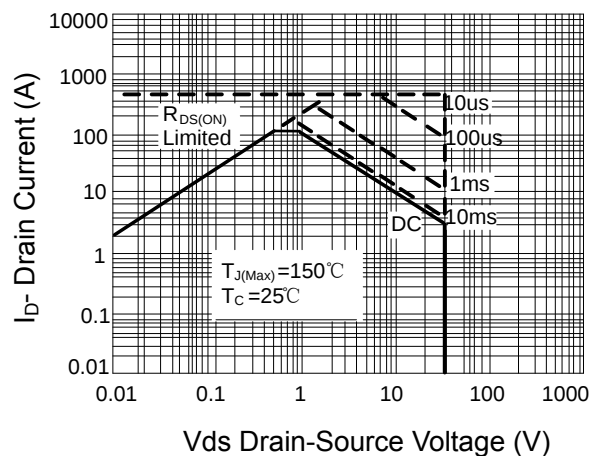


Figure 9: Safe operation area

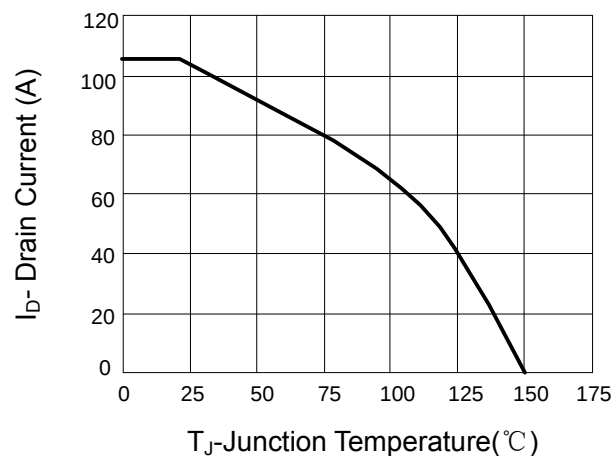


Figure 10: Current de-rating

■ TO-252 PACKAGE OUTLINE DIMENSIONS

