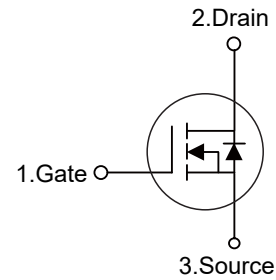


■ PRODUCT CHARACTERISTICS

$V_{DSS}$	40V
$R_{DS(ON)}$ Typ(@ $V_{GS}=2.5V$ )	3.5m $\Omega$
$R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$ )	2.8m $\Omega$
$I_D$	140A

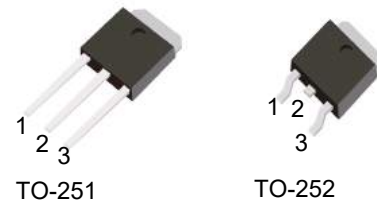


■ FEATURES

Advanced Split Gate Trench Technology  
Excellent  $R_{DS(ON)}$  and Low Gate Charge  
Lead free product is acquired

■ APPLICATION

Load Switch  
PWM Application  
Power management



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT140N04D	TO-252	250pieces /Reel
N/A	MOT140N04C	TO-251	70pieces /Tube

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

Parameter	Symbol	Max	Unit	
Drain-Source Voltage	$V_{DSS}$	40	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V	
Continuous Drain Current	$I_D$	$T_C = 25^{\circ}C$	140	A
		$T_C = 100^{\circ}C$	91	A
Pulsed Drain Current	$I_{DM}$	560	A	
Single Pulsed Avalanche Energy	$E_{AS}$	196	mJ	
Power Dissipation	$P_D$	83	W	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	$^{\circ}C/W$	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}C$	

■ ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V, V_{GS}=0V,$	-	-	1.0	$\mu A$
Gate to Body Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	-	2.5	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	2.8	3.2	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	-	3.7	4.5	m $\Omega$
Dynamic characteristics						
Input Capacitance	$C_{iss}$	$V_{DS}=20V, V_{GS}=0V,$ $f=1.0MHz$	-	2625	-	pF
Output Capacitance	$C_{oss}$		-	1102	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	57	-	pF
Total Gate Charge	$Q_g$	$V_{DS}=20V, I_D=75A,$ $V_{GS}=10V$	-	42	-	nC
Gate-Source Charge	$Q_{gs}$		-	10	-	nC
Gate-Drain("Miller") Charge	$Q_{gd}$		-	7	-	nC
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=20V, I_D=75A,$ $R_G=1.6\Omega, V_{GS}=10V$	-	9	-	ns
Turn-on Rise Time	$t_r$		-	103	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	37	-	ns
Turn-off Fall Time	$t_f$		-	129	-	ns
Drain-source diode characteristics and maximum ratings						
Drain to Source Diode Forward	$I_S$		-	-	140	A
Drain to Source Diode Forward Current	$I_{SM}$		-	-	560	A
Drain to Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$T_J=25^\circ\text{C},$	-	38	-	ns
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F=20A, di/dt=100A/\mu s$	-	19	-	nC

■ TYPICAL CHARACTERISTICS

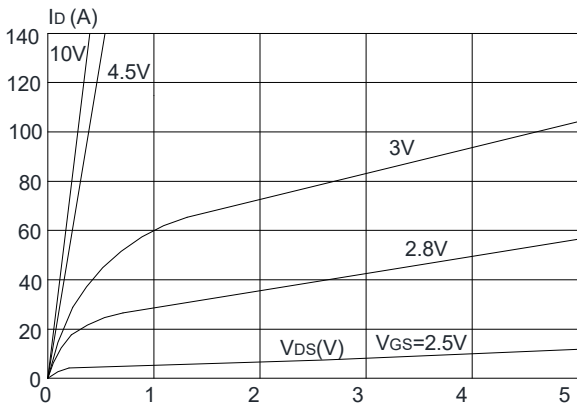


Figure1: Output Characteristics

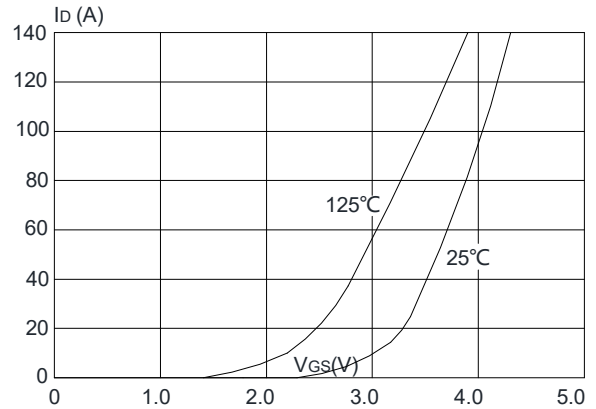


Figure1: Typical Transfer Characteristics

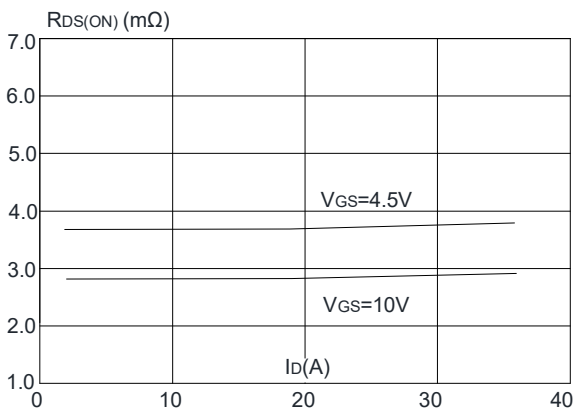


Figure3: On-resistance vs. Drain Current

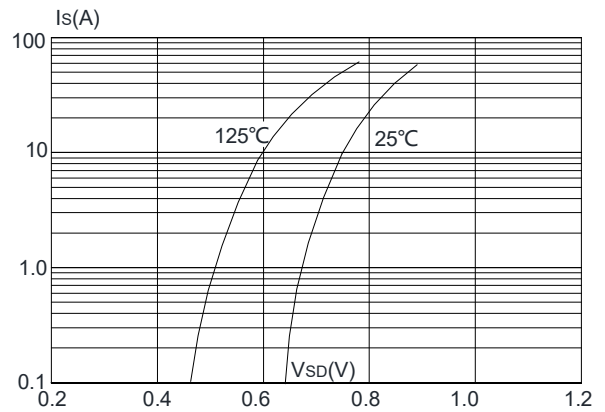


Figure4: Body Diode Characteristics

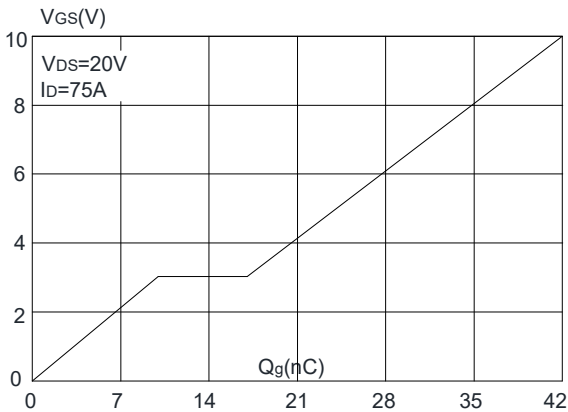


Figure5: Gate Charge Characteristics

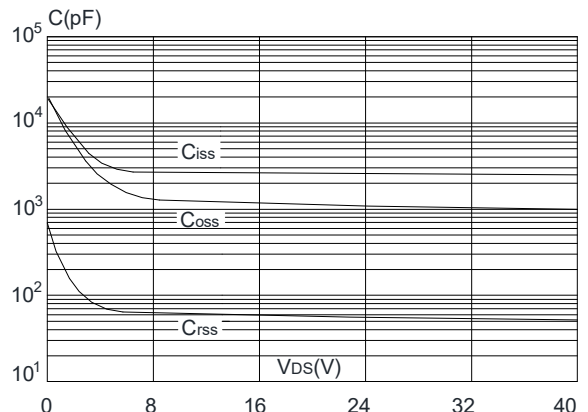


Figure6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

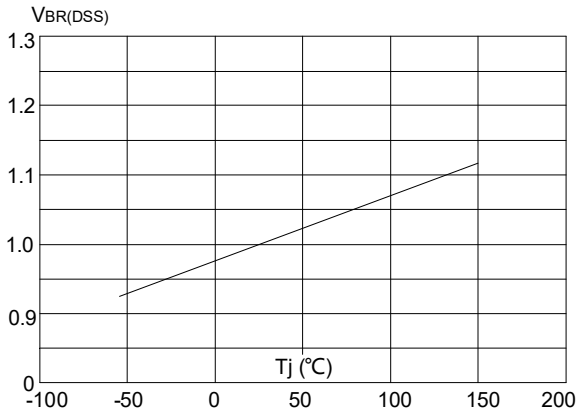


Figure7: Normalized Breakdown Voltage vs. Junction Temperature

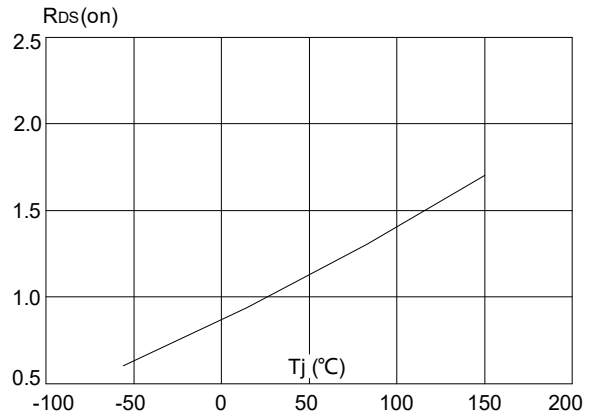


Figure8: Normalized on Resistance vs. Junction Temperature

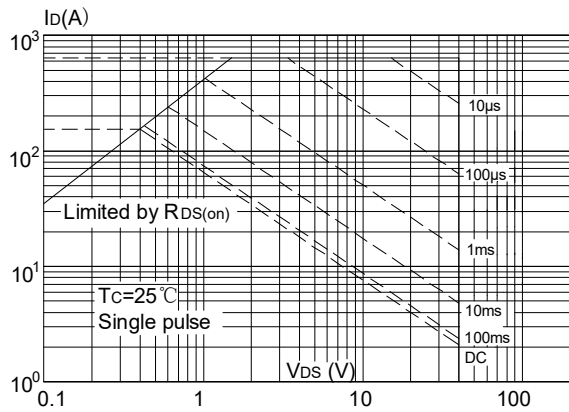


Figure9: Maximum Safe Operating Area

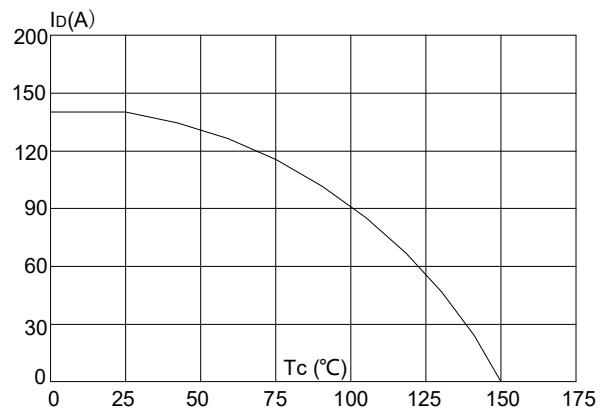


Figure10:Maximum Continuous Drain Current vs. Case Temperature

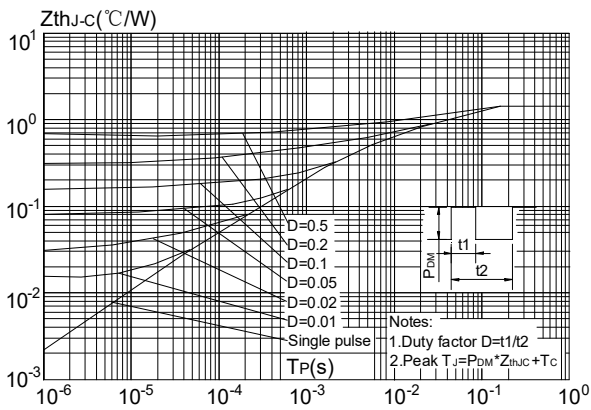
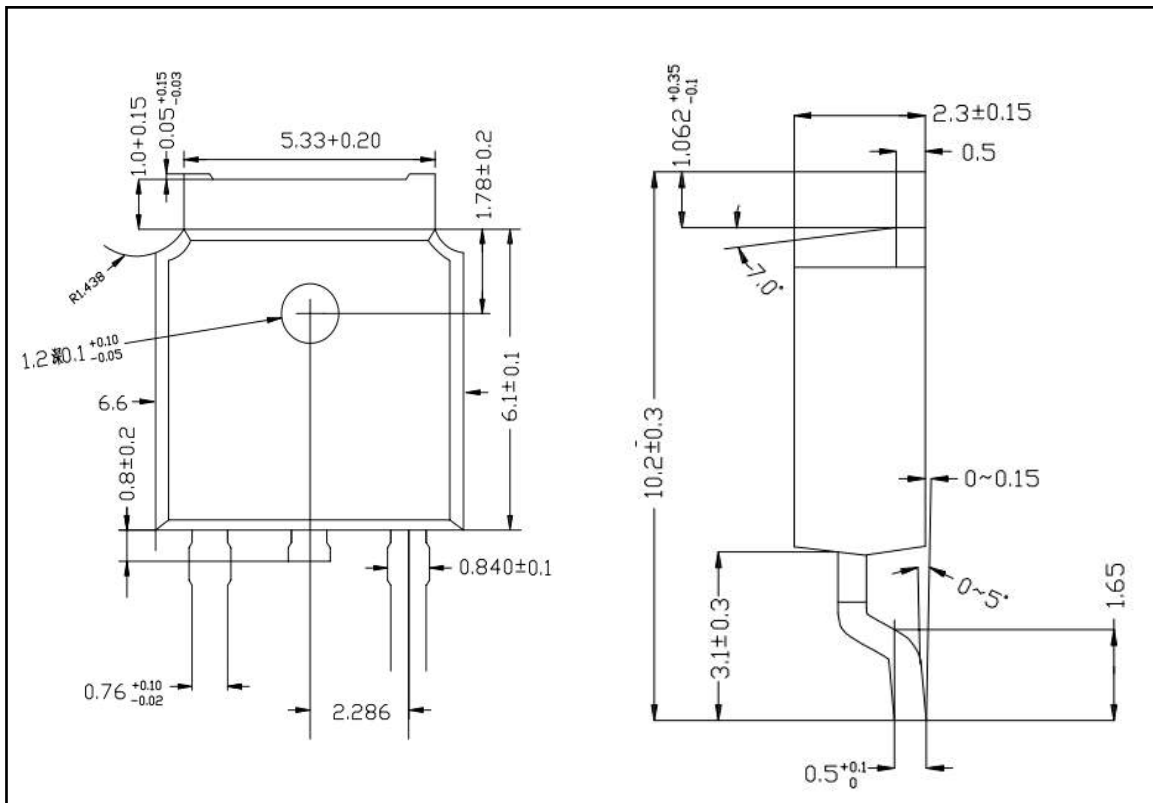


Figure11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

■ TO-252-2L PACKAGE OUTLINE DIMENSIONS



■ TO-251-3L PACKAGE OUTLINE DIMENSIONS

