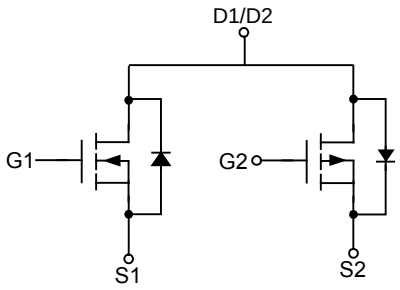
■ PRODUCT CHARACTERISTICS

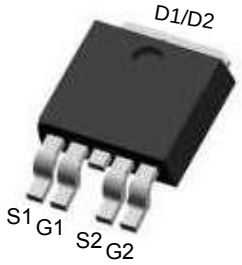
N-CHANNEL		P-CHANNEL	
V_{DSS}	40V	V_{DSS}	-40V
$R_{DS(ON)}$ Typ(@V_{GS}=10V)	16mΩ	$R_{DS(ON)}$ Typ(@V_{GS}=-10V)	14mΩ
$R_{DS(ON)}$ Typ(@V_{GS}=4.5V)	19mΩ	$R_{DS(ON)}$ Typ(@V_{GS}=-4.5V)	18mΩ
I_D	28A	I_D	-25A

Symbol



■ 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	MOT4618D	TO-252-4L	2500 pieces/Reel

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

Parameter	Symbol	N-CHANNEL	P-CHANNEL	Unit
Drain-Source Voltage	V_{DSS}	40	-40	V
Gate-Source Voltage	V_{GSS}	±20	±20	V
Drain Current Continuous(@V_{GS}=10V ,T_A=25°C)	I_D	28	-25	A
Drain Current Pulsed	I_{DM}	112	-100	A
Power Dissipation	P_D	38		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}	3.3	°C/W

■ N-CHANNEL 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	40	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=40V,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=15A	-	16	22	mΩ
		V_{GS}=4.5V,I_D=15A	-	19	26	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	1	1.45	2.5	V
Dynamic characteristics						
Gate capacitance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	2.7	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=5V,I_D=5A	-	8	-	S
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V f=1.0MHz	-	1082	-	pF
Output Capacitance	C_{oss}		-	83	-	pF
Reverse Transfer Capacitance	C_{rss}		-	74	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=20V, I_D=20A,R_G=3Ω	-	55	-	ns
Rise Time	t_r		-	14	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	24	-	ns
Fall Time	t_f		-	5	-	ns
Total Gate Charge	Q_g	I_D=20A, V_{DS}=20V V_{GS}=10V	-	22.9	-	nC
Gate to Source Charge	Q_{gs}		-	3.5	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	5.3	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	28	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	112	A
Diode Forward Voltage	V_{SD}	I_{SD}=1A, V_{GS}=0V	-	0.74	1.2	V

■ P-CHANNEL 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	-40	-	-	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}=-40V,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=-15A	-	14	18	mΩ
		V_{GS}=-4.5V,I_D=-15A	-	18	24	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.5	-2.5	V
Dynamic characteristics						
Gate capacitance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	17	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=-5V,I_D=-5A	-	15	-	S
Input Capacitance	C_{iss}	V_{DS}=-20V,V_{GS}=0V f=1.0MHz	-	928	-	pF
Output Capacitance	C_{oss}		-	103	-	pF
Reverse Transfer Capacitance	C_{rss}		-	89	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=-10V,V_{DS}=-20V, I_D=-20A,R_G=6Ω	-	10	-	ns
Rise Time	t_r		-	18	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	38	-	ns
Fall Time	t_f		-	24	-	ns
Total Gate Charge	Q_g	I_D=-20A, V_{DS}=-20V V_{GS}=-10V	-	42.2	-	nC
Gate to Source Charge	Q_{gs}		-	6.9	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	9.7	-	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	-	-0.74	-1.2	V

■ N-CHANNEL TYPICAL CHARACTERISTICS

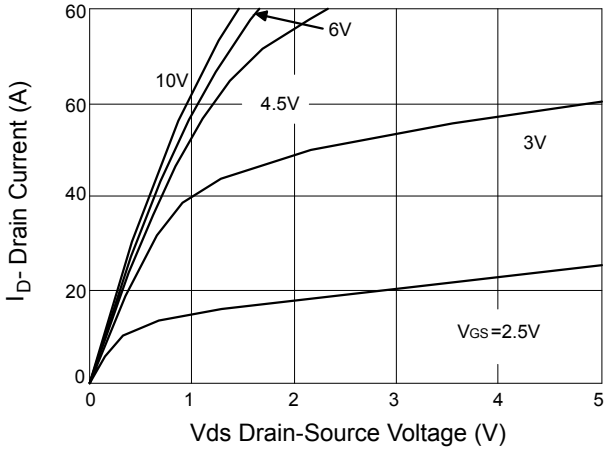


Figure 1 Output characteristics

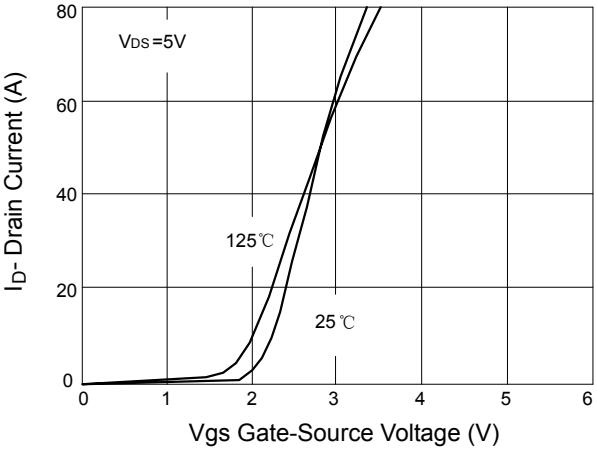


Figure 3 Transfer characteristics

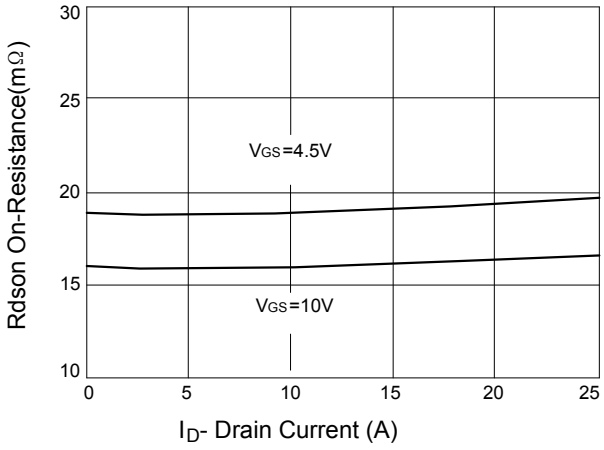


Figure 4 Rdson-drain current

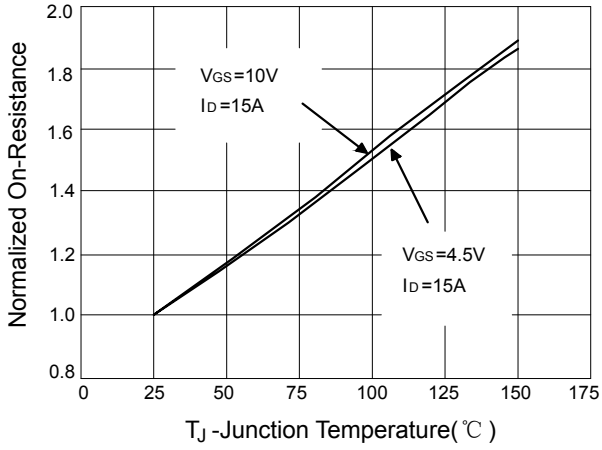


Figure 4 Rdson-junction temperature

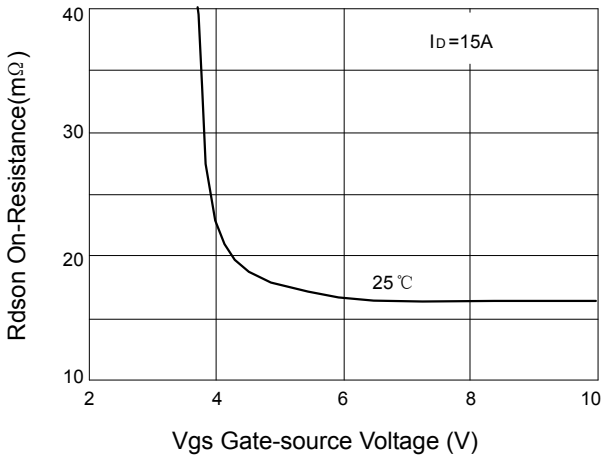


Figure 5 Rdson vs vgs

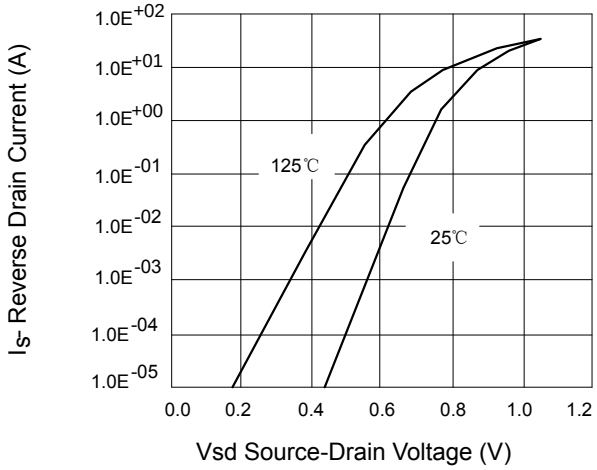


Figure 6 Source-drain diode forward

■ N-CHANNEL TYPICAL CHARACTERISTICS(Cont.)

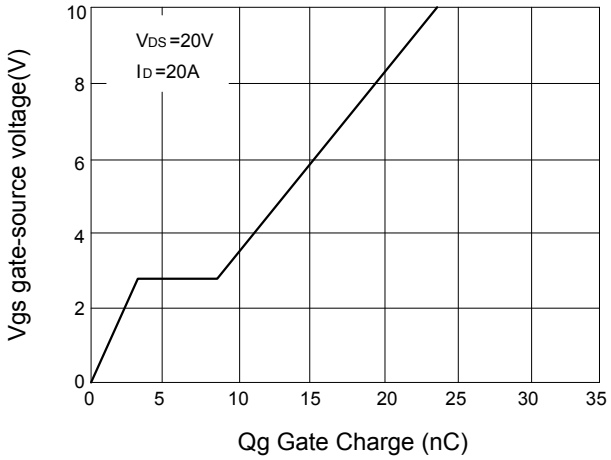


Figure 7 Gate charge

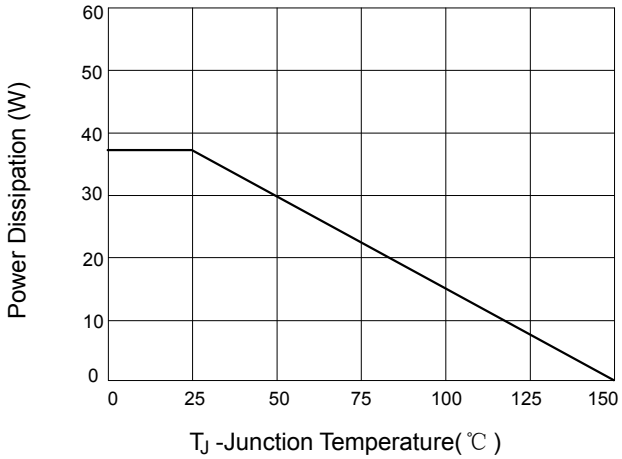


Figure 8 Power de-rating

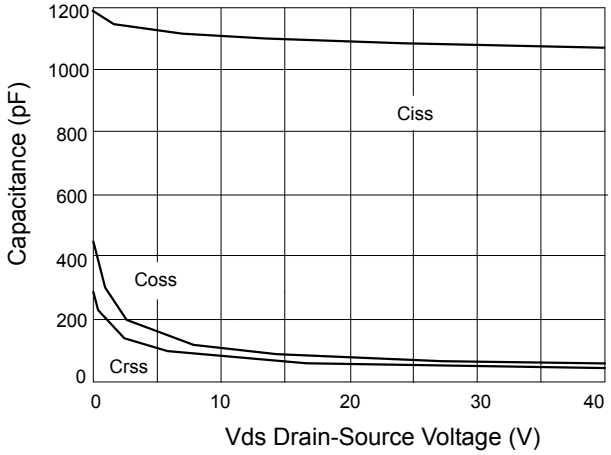


Figure 9 Capacitance vs. vds

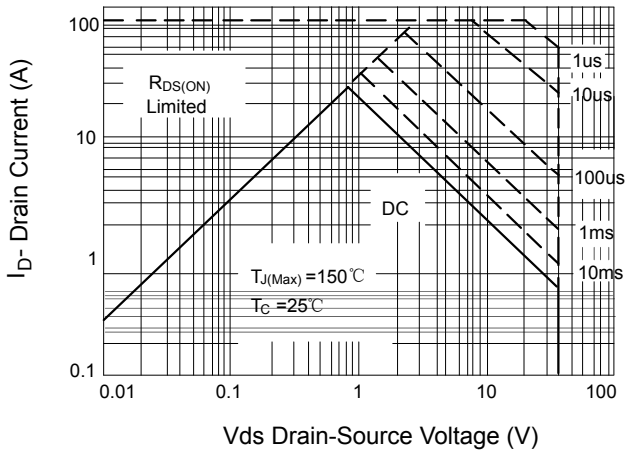


Figure 10 Safe operation area

■ P-CHANNEL TYPICAL CHARACTERISTICS

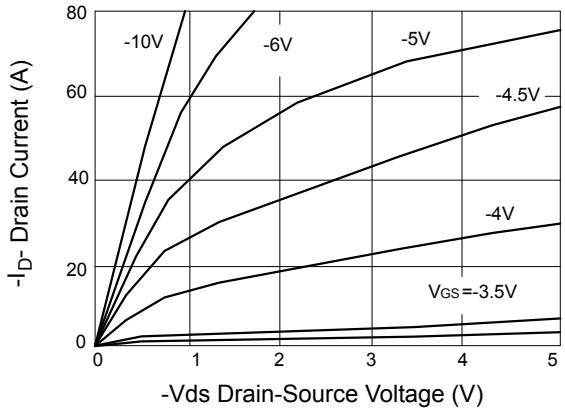


Figure 1 Output characteristics

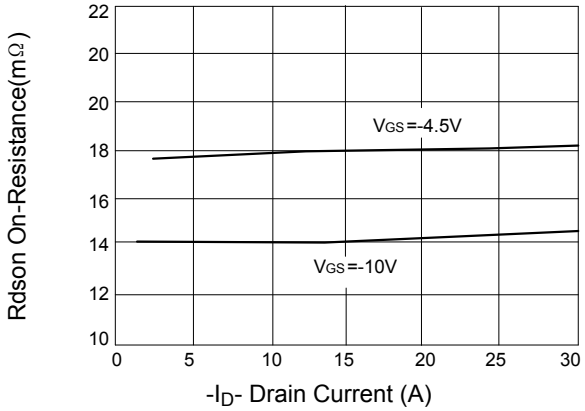


Figure 2 Rdson-drain current

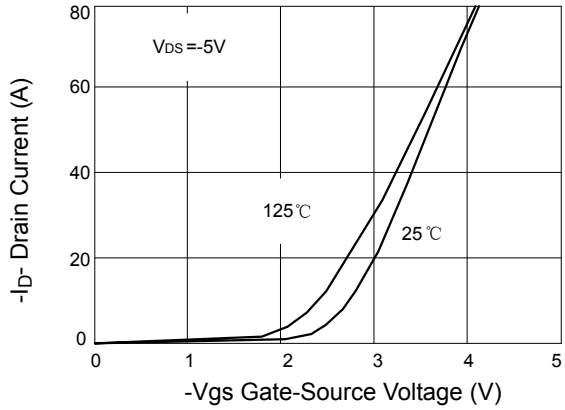


Figure 3 Transfer characteristics

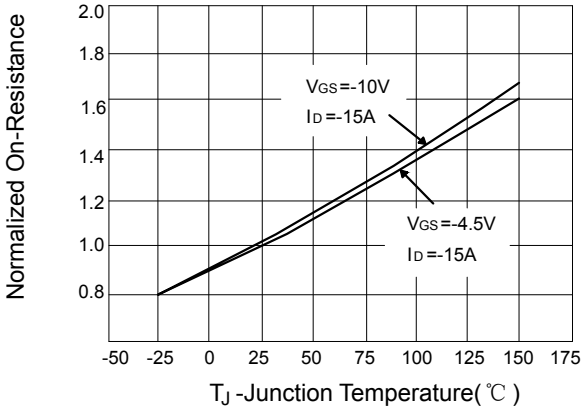


Figure 4 Rdson-junction temperature

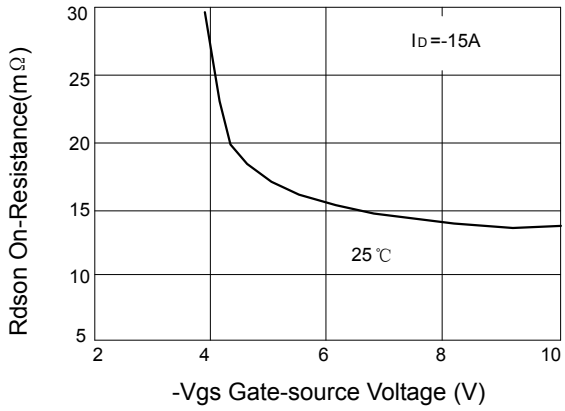


Figure 5 Rdson vs vgs

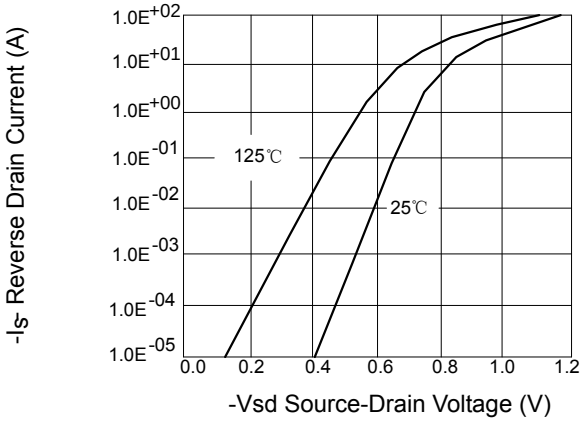


Figure 6 Source-drain diode forward

■ P-CHANNEL TYPICAL CHARACTERISTICS(Cont.)

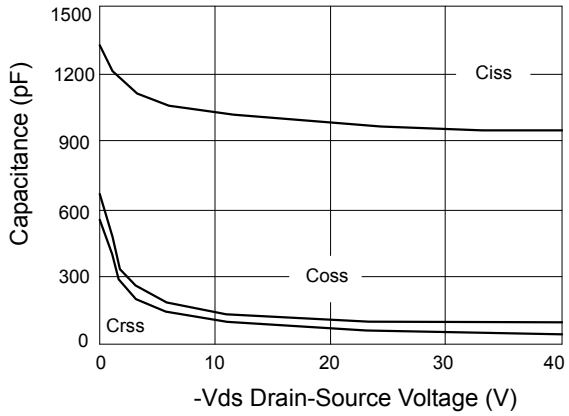


Figure 7 Capacitance vs. vds

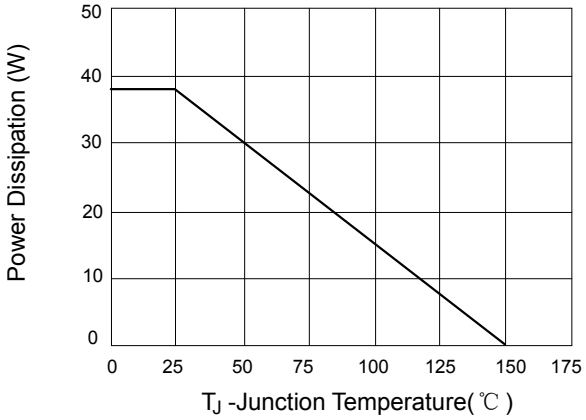


Figure 8 Power de-rating

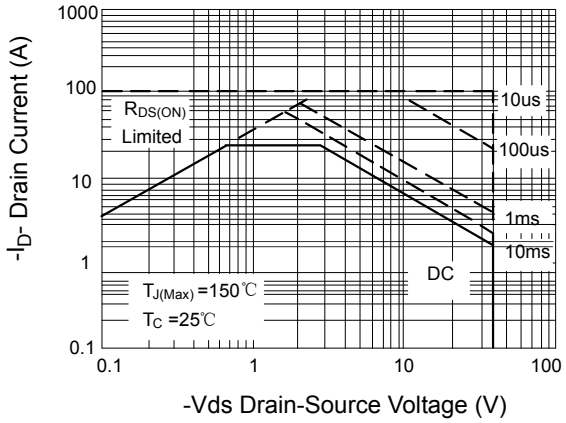


Figure 9 Safe operation area

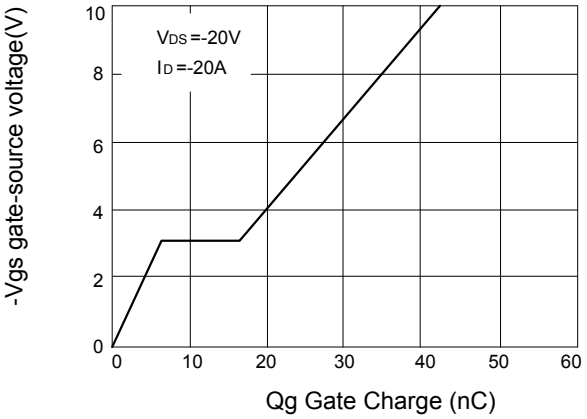


Figure 10 Gate charge

■ TO-252-4L PACKAGE OUTLINE DIMENSIONS

