

PRODUCT CHARACTERISTICS

N-CHANNEL		P-CHANNEL	
V_{DSS}	40V	V_{DSS}	-40V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	13m Ω	$R_{DS(ON)}$ Typ(@ $V_{GS}=-10V$)	22m Ω
$R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$)	16m Ω	$R_{DS(ON)}$ Typ(@ $V_{GS}=-4.5V$)	32m Ω
I_D	15A	I_D	-15A

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	MOT4633S	SOP8	5000 pieces/Reel

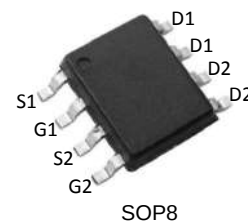
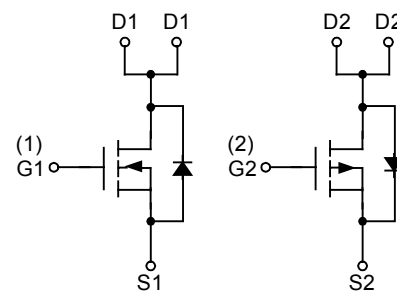
ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

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(@ $V_{GS}=10V, T_A=25^{\circ}C$)	I_D	15	-15	A
Drain Current Pulsed	I_{DM}	60	-60	A
Avalanche Energy	E_{AS}	90	90	mJ
Power Dissipation	P_D	4		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}	31.5	$^{\circ}C/W$

Symbol



■ N-MOS 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	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 =8 A	-	13	16	mΩ
		V _{GS} =4.5V,I _D =8 A	-	16	20	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	-	2.6	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =5V,I _D =5A	-	13	-	S
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V f=1.0MHz	-	1081	-	pF
Output Capacitance	C _{oss}		-	86	-	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 =8A ,R _G =3Ω	-	5.5	-	ns
Rise Time	t _r		-	14	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	24	-	ns
Fall Time	t _f		-	12	-	ns
Total Gate Charge	Q _g	I _D =8 A, V _{DS} =20V V _{GS} =10V	-	28	-	nC
Gate to Source Charge	Q _{gs}		-	3.9	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	5.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	15	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	60	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.74	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =8A, T _J =25 °C dI/dt=100A/μs	-	30	-	ns
Reverse Recovery Charge	Q _{rr}		-	18	-	nC

■ P-MOS 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	-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 =-8A	-	22	26	mΩ
		V _{GS} =-4.5V,I _D =-8A	-	32	37	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =-250μA	-1	-1.7	-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	-	12	-	S
Input Capacitance	C _{iss}	V _{DS} =-20V,V _{GS} =0V f=1.0MHz	-	928	-	pF
Output Capacitance	C _{oss}		-	105	-	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 =-8A,R _G =6Ω	-	6.5	-	ns
Rise Time	t _r		-	15	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	23	-	ns
Fall Time	t _f		-	10	-	ns
Total Gate Charge	Q _g	I _D =-8 A, V _{DS} =-20V V _{GS} =-10V	-	26	-	nC
Gate to Source Charge	Q _{gs}		-	3.7	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	6.0	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	-15	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	- 60	A
Diode Forward Voltage	V _{SD}	I _{SD} =-1A, V _{GS} =0V	-	-0.76	-1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =-8 A, T _J =25 °C dI/dt=100A/μs	-	22	-	ns
Reverse Recovery Charge	Q _{rr}		-	13	-	nC

■ N-MOS TYPICAL CHARACTERISTICS

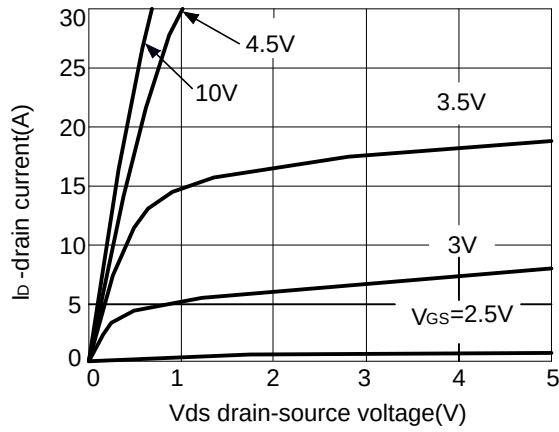


Figure1:output characteristics

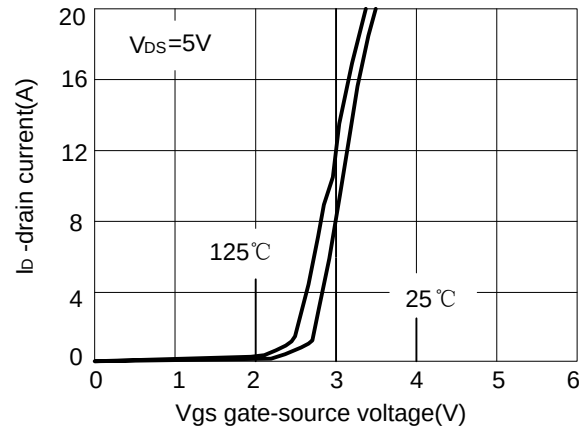


Figure2:transfer characteristics

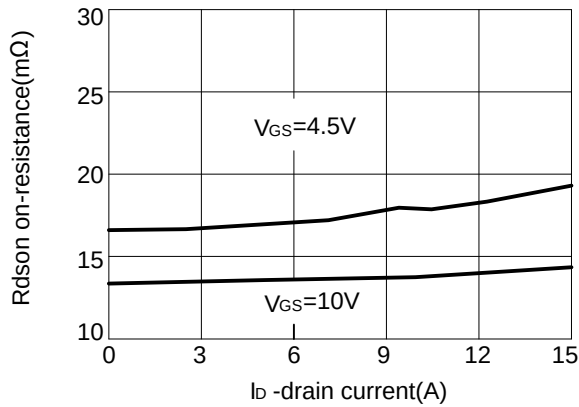


Figure3:drain-source on-resistance

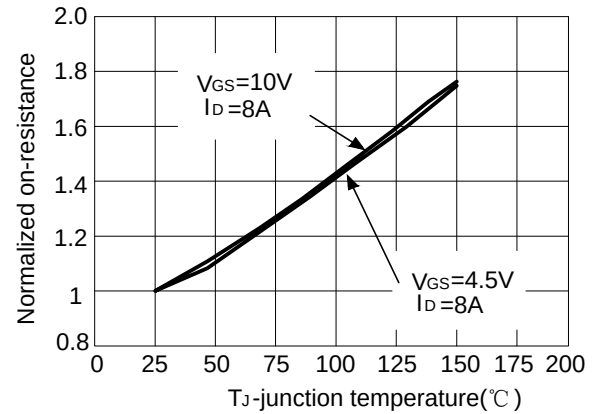


Figure4:drain-source on-resistance

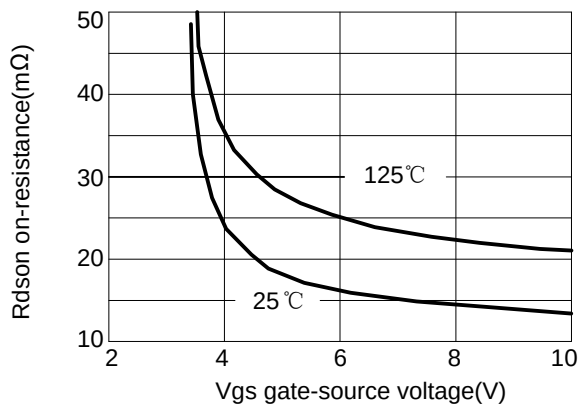


Figure5:rdson vs vgs

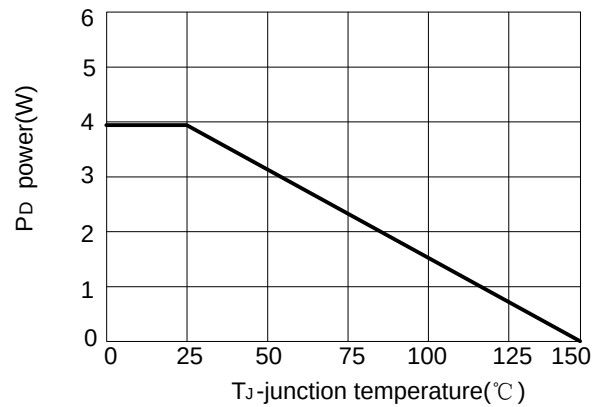
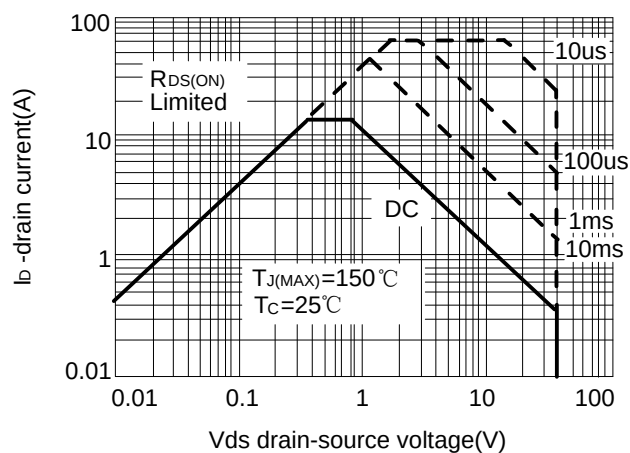
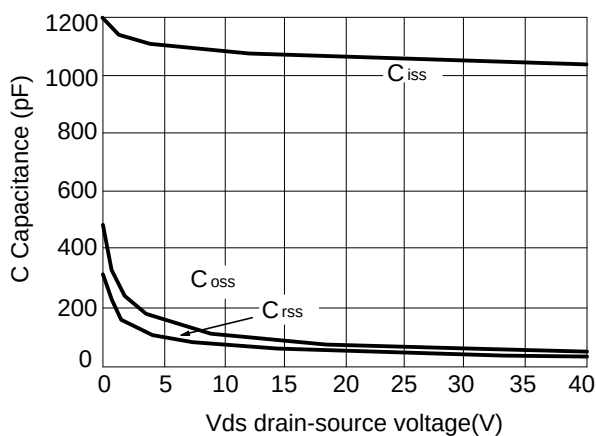
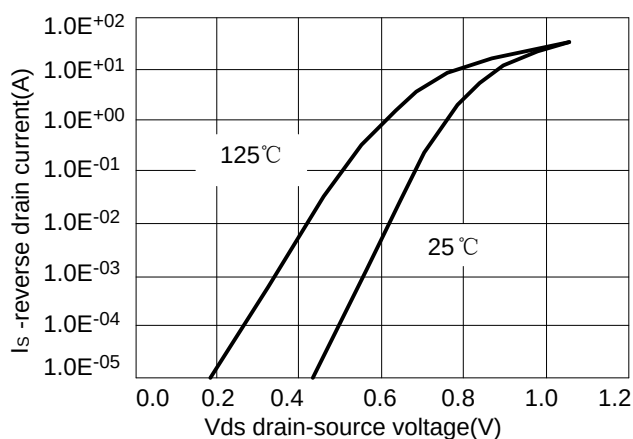
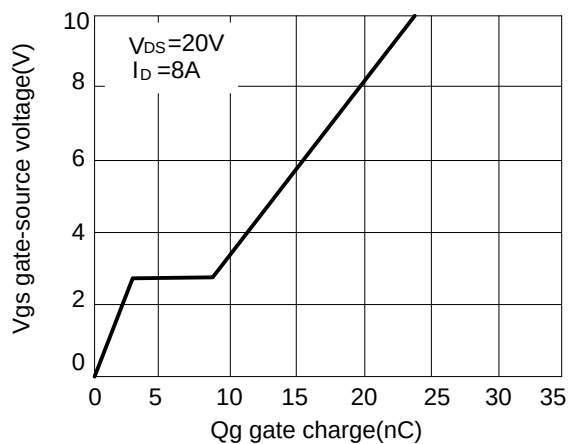


Figure6:power dissipation

■ N-MOS TYPICAL CHARACTERISTICS(Cont.)



■ P-MOS TYPICAL CHARACTERISTICS

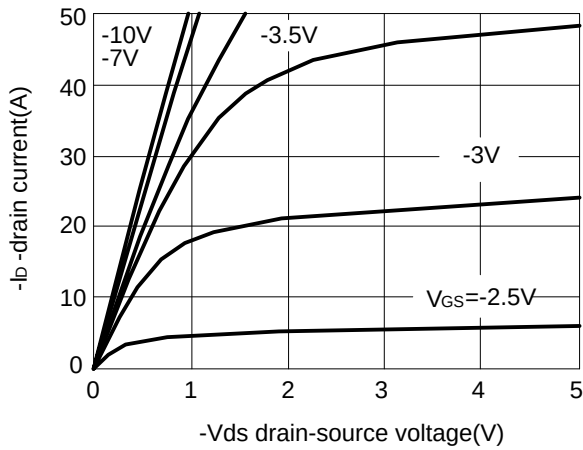


Figure1:output characteristics

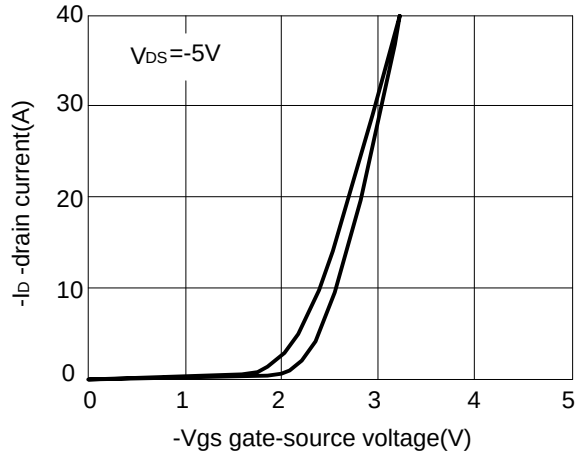


Figure3:transfer characteristics

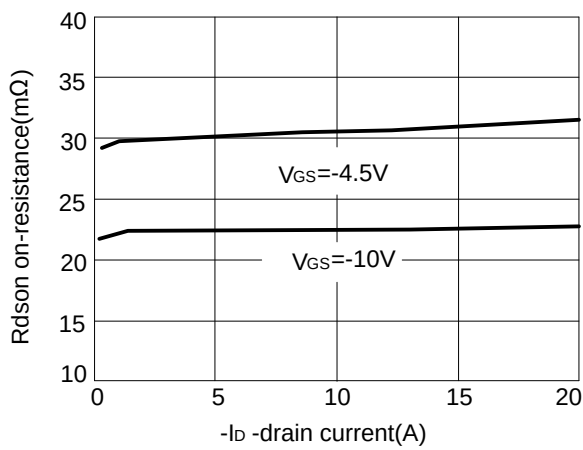


Figure5:drain-source on-resistance

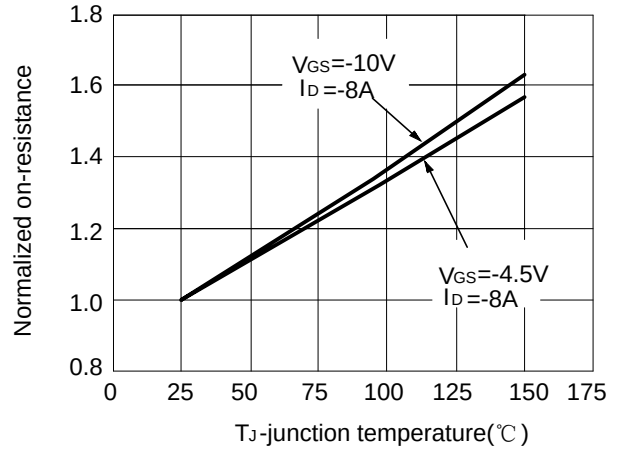


Figure2:drain-source on-resistance

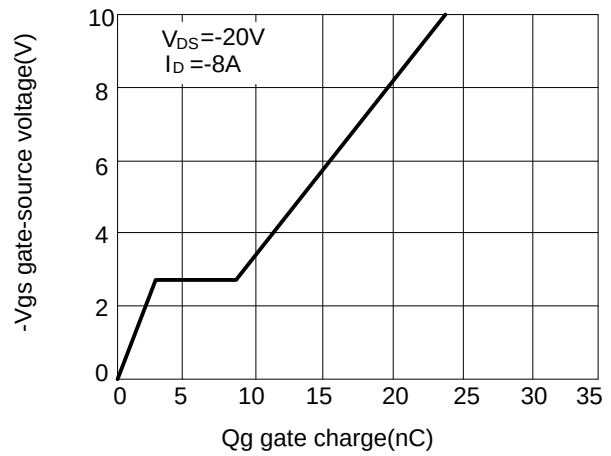


Figure4:gate charge

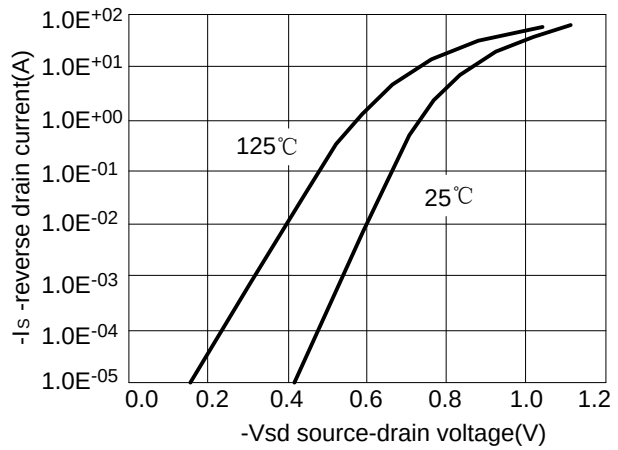


Figure6:source-drain diode forward

■ P-MOS TYPICAL CHARACTERISTICS(Cont.)

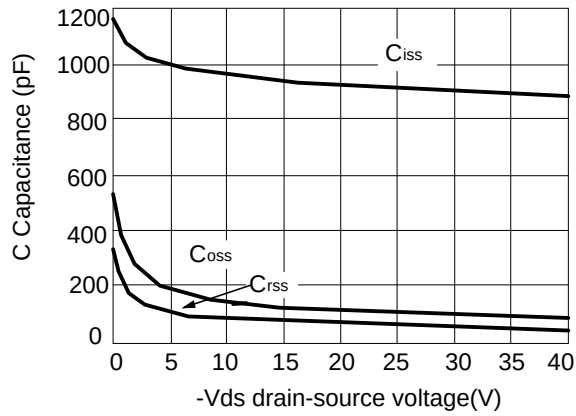


Figure7:capacitance vs vds

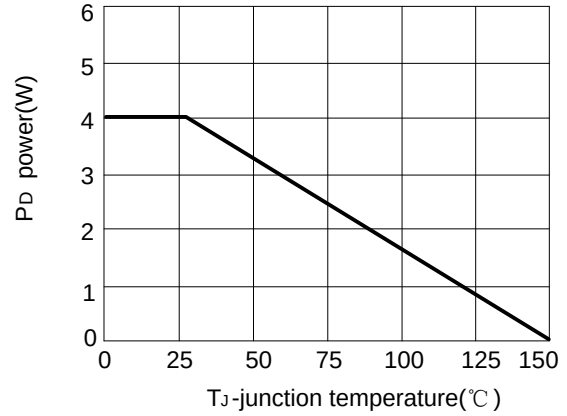


Figure8:power dissipation

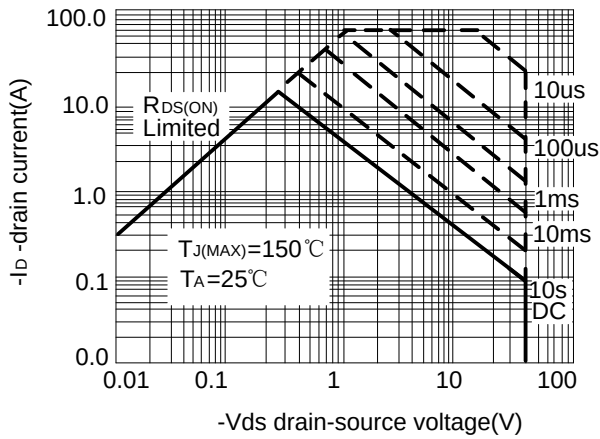


Figure9:Safe operation area

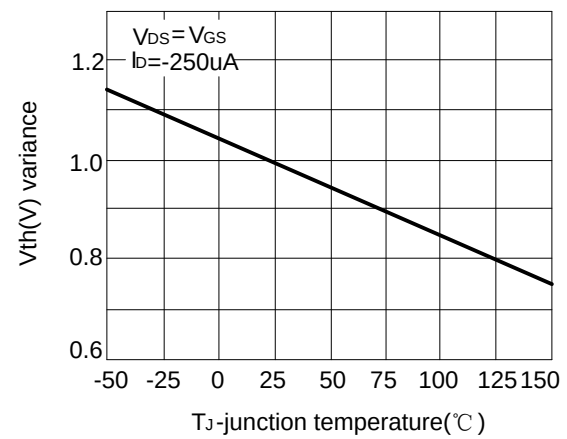


Figure10:power dissipation

■ SOP8 PACKAGE OUTLINE DIMENSIONS

