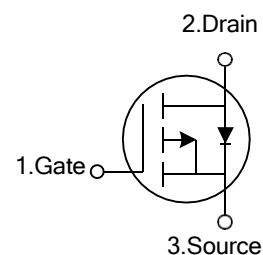


PRODUCT CHARACTERISTICS

V_{DS}	-20V
$R_{DS(on)}$ Typ(@ $V_{GS}=-4.5V$)	15m Ω
$R_{DS(on)}$ Typ(@ $V_{GS}=-2.5V$)	16.5m Ω
I_D	-50A

Symbol

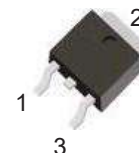


APPLICATIONS

- * Power switch
- * DC/DC converters

FEATURES

- * $V_{DS}=-20V, I_D=-50A$
- * Super high dense cell design
- * Advanced trench process technology
- * Reliable and rugged
- * High density cell design for ultra low on-resistance



TO-252

ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT50P02D	TO-252	2500 pieces /Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous(@ $V_{GS}=-4.5V, T_A=25^{\circ}C$)	I_D	-50	A
Pulsed Drain Current	I_{DM}	-200	A
Avalanche Energy *	E_{AS}	90	mJ
Maximum Power Dissipation	P_D	30	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}	4.2	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=14V, V_G=10V, L=0.5mH, R_g=25\Omega$

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} =0V I _D =-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V,V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V,V _{DS} =0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	-0.4	-0.65	-1.45	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-10A	-	15	18	mΩ
		V _{GS} =-2.5V, I _D =-10A	-	16.5	23	mΩ
Dynamic characteristics						
Gate Resistance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	6.1	-	Ω
Forward Transconductance	g _{FS}	V _{DS} =-5V,I _D =3A	-	1	-	S
Input Capacitance	C _{iSS}	V _{DS} =-10V,V _{GS} =0V, F=1.0MHz	-	1800	-	PF
Output Capacitance	C _{oSS}		-	194	-	PF
Reverse Transfer Capacitance	C _{rSS}		-	164	-	PF
Switching characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DS} =-10V, I _D =-10A, V _{GS} =-4.5V,R _G =3Ω	-	12	-	nS
Turn-on Rise Time	t _r		-	40	-	nS
Turn-Off Delay Time	t _{d(off)}		-	30	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =-10V,I _D =-10A,V _{GS} =-4.5V	-	35	-	nC
Gate-Source Charge	Q _{gs}		-	5	-	nC
Gate-Drain Charge	Q _{gd}		-	10	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =-1 A	-	-0.73	-1.2	V
Continuous Source Current(Body Diode)	I _S		-	-	-50	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	-200	A
Reverse Recovery Time	t _{rr}	I _{SD} =10 A, T _J =25°C dI/dt=100A/μs	-	23	-	ns
Reverse Recovery Charge	Q _{rr}		-	14	-	nC

■ TYPICAL CHARACTERISTICS

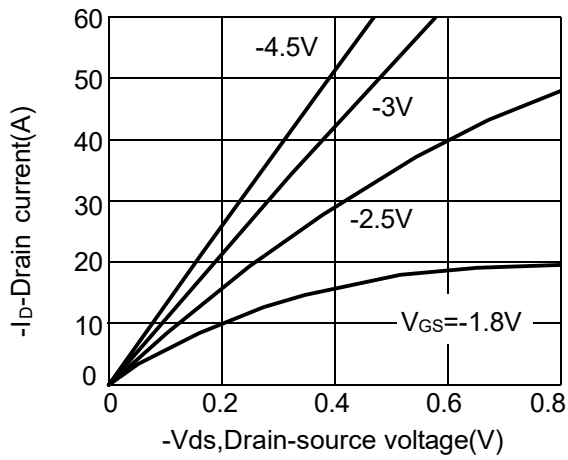


Figure 1: Output characteristics

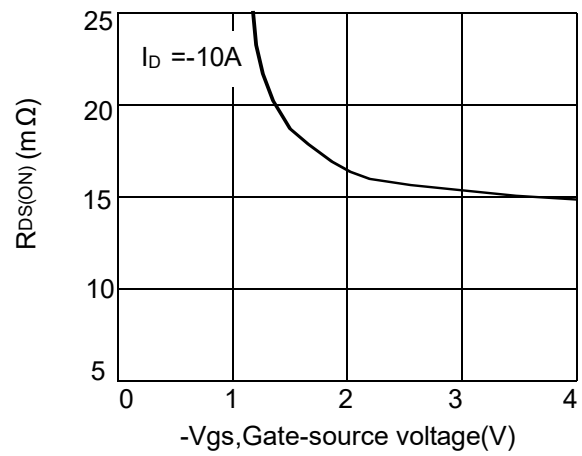


Figure 2: On-resistance vs. gate-source voltage

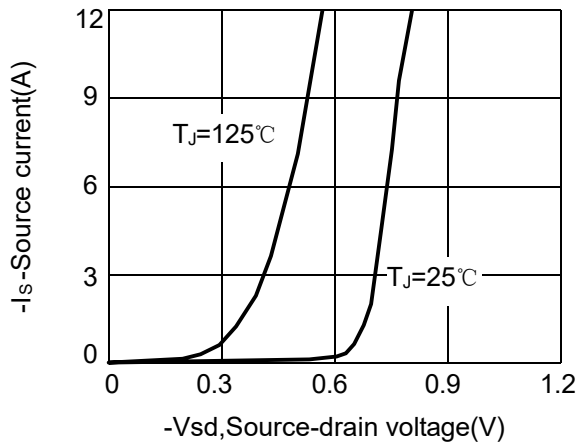


Figure 3: Forward characteristics of reverse

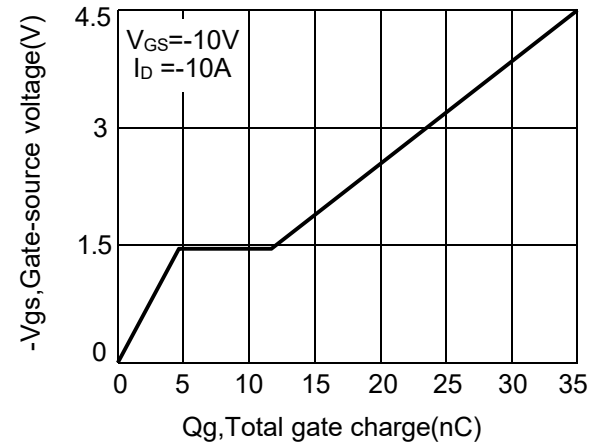


Figure 4: Gate-charge characteristics

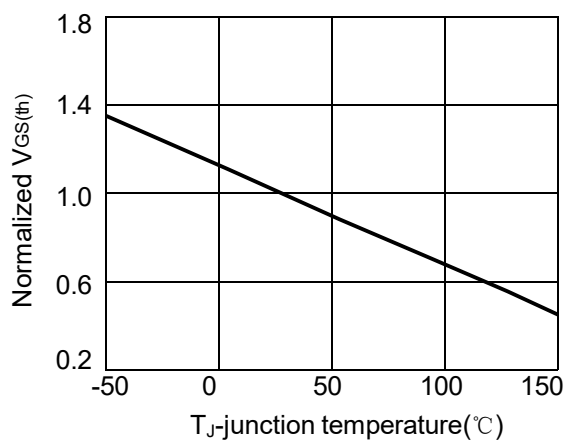


Figure 5: Normalized $V_{GS(th)}$ vs. junction temperature

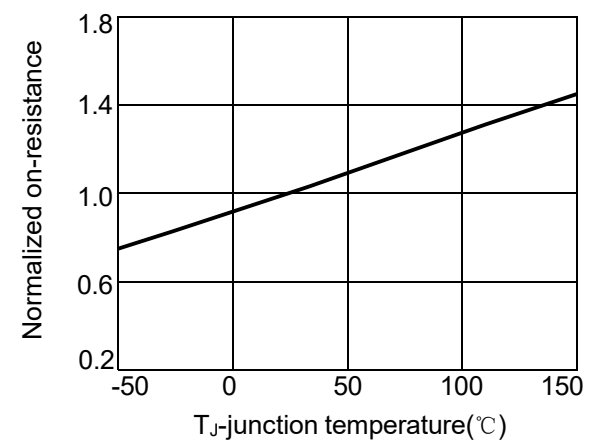


Figure 6: Normalized $R_{DS(ON)}$ vs. junction temperature

■ TYPICAL CHARACTERISTICS(Cont.)

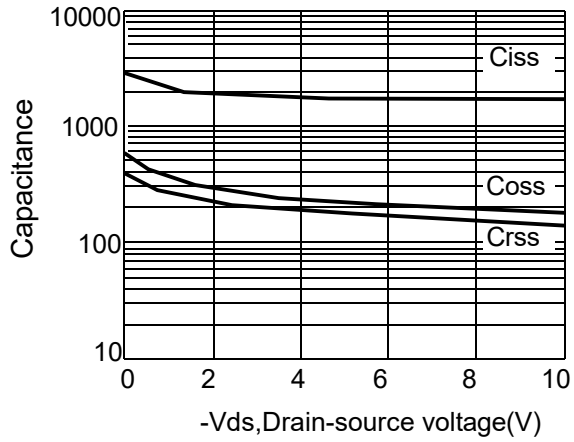


Figure 7: Capacitance

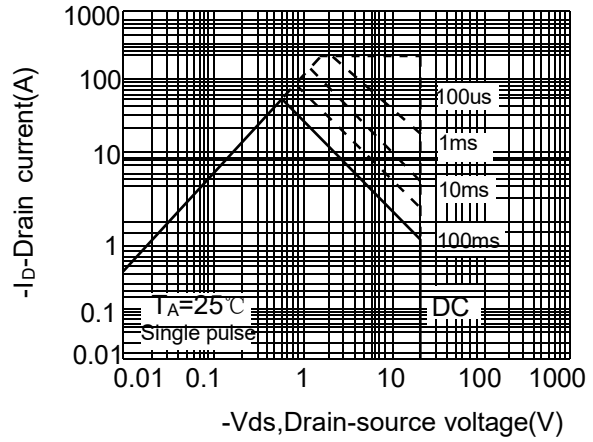


Figure 8: Safe operating area

■ TO-252 PACKAGE OUTLINE DIMENSIONS

