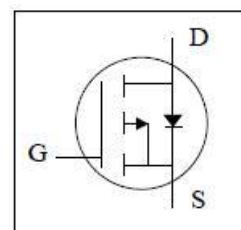
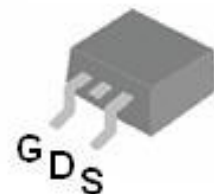


P-CHANNEL ENHANCEMENT MODE POWER

MOSFET

❖ GENERAL DESCRIPTION

The TO-252 package is widely preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



❖ FEATURES

- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

BV_{DSS}	-40V
$R_{DS(ON)}$	90m Ω
I_D	-14A

❖ ABSOLUTE MAXIMUM RATINGS

Characteristics	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, V_{GS} @ 10V	$I_D@T_C=25^\circ C$	-14	A
Continuous Drain Current, V_{GS} @ 10V	$I_D@T_C=100^\circ C$	-8.6	A
Pulsed Drain Current ¹	I_{DM}	-40	A
Total Power Dissipation	$P_D@T_C=25^\circ C$	26	W
Linear Derating Factor		0.21	W/ $^\circ C$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$

❖ THERMAL DATA

Characteristics	Symbol	Rating	Unit
Maximum Thermal Resistance, Junction-case	Rthj-c	4.8	$^\circ C/W$
Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	Rthj-a	62.5	$^\circ C/W$
Maximum Thermal Resistance, Junction-ambient	Rthj-a	110	$^\circ C/W$

❖ ELECTRICAL CHARACTERISTICS

($V_{CC} = 5V$, $T_A = 25^\circ C$, unless otherwise specified)

Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=-250\mu A$	-40	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_j$	Reference to $25^\circ C$, $I_D=-1mA$	-	-0.03	-	V/ $^\circ C$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10V$, $I_D=-10A$	-	-	90	m Ω
		$V_{GS}=-4.5V$, $I_D=-6A$	-	-	130	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu A$	-1	-	-3	V
Forward Trans conductance	g_{fs}	$V_{DS}=-10V$, $I_D=-10A$	-	7	-	S
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-40V$, $V_{GS}=0V$	-	-	-1	μA
Drain-Source Leakage Current ($T_j=125^\circ C$)		$V_{DS}=-32V$, $V_{GS}=0V$			-250	μA
Gate-Source Leakage	I_{GSS}	$V_{GS}=\pm 20V$, $V_{DS}=0V$			± 100	nA
Total Gate Charge ²	Q_g	$I_D=-10A$	-	7	12	nC
Gate-Source Charge	Q_{gs}	$V_{DS}=-30V$	-	2	-	nC
Gate-Drain ("Miller") Charge	Q_{gd}	$V_{GS}=-4.5V$	-	4	-	nC
Turn-on Delay Time ²	$t_{d(on)}$	$V_{DS}=-20V$	-	8	-	sn
Rise Time	t_r	$I_D=-10A$	-	20	-	ns
Turn-off Delay Time	$t_{d(off)}$	$R_G=3.3\Omega$	-	19	-	ns
Fall Time	t_f	$V_{GS}=-10V$ $R_D=2\Omega$	-	6	-	ns
Input Capacitance	C_{iss}	$V_{GS}=0V$	-	490	780	pF
Output Capacitance	C_{oss}	$V_{DS}=-25V$	-	80	-	pF
Reverse Transfer Capacitance	C_{rss}	$f=1.0MHz$	-	65	-	pF
Gate Resistance	R_g	$f=1.0MHz$	-	5.8	8.7	Ω
Source-Drain Diode						
Forward On Voltage ²	V_{DS}	$I_S=-10A$, $V_{GS}=0V$	-	-	-1.3	V
Reverse Recovery Time ²	t_{rr}	$I_S=-10A$, $V_{GS}=0V$,	-	28	-	ns
Reverse Recovery Charge	Q_{rr}	$di/dt=-100A/\mu s$	-	26	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Surface mounted on 1 in2 copper pad of FR4 board AM9569D

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION. USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED. AXElite DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. AXElite RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

❖ TYPICAL CHARACTERISTICS

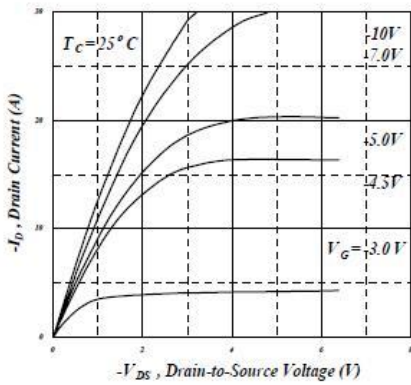


Fig 1. Typical Output Characteristics

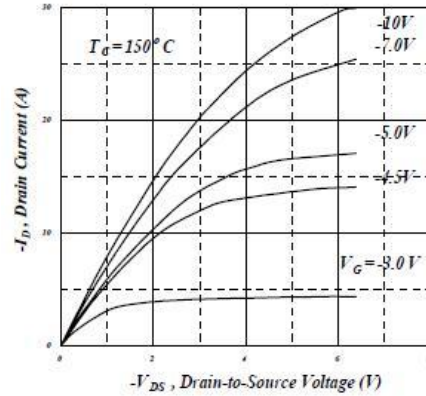


Fig 2. Typical Output Characteristics

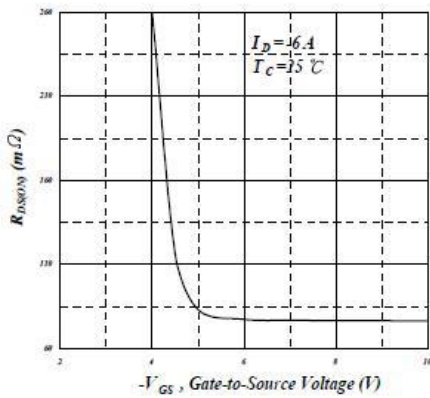


Fig 3. On-Resistance v.s. Gate Voltage

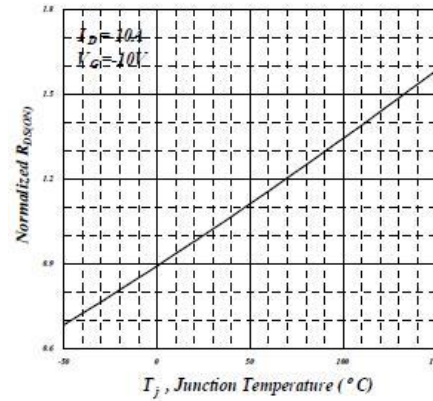


Fig 4. Normalized On-Resistance v.s. Junction Temperature

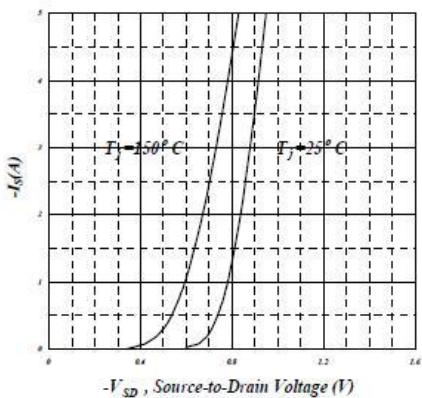


Fig 5. Forward Characteristic of Reverse Diode

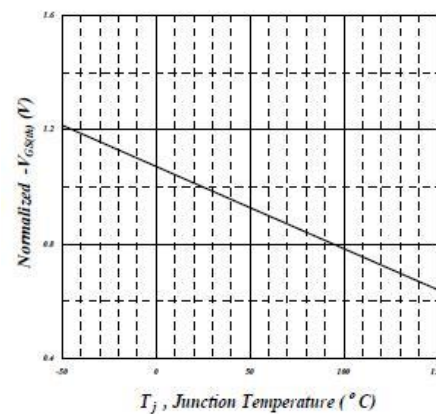


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

❖ TYPICAL CHARACTERISTICS (COUNTINOUS)

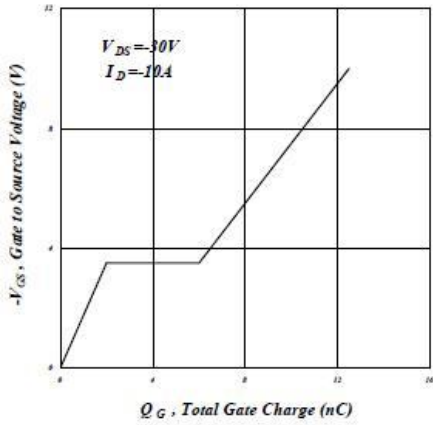


Fig 1. Typical Output Characteristics

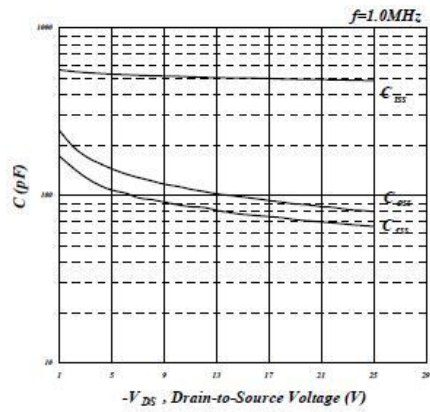


Fig 2. Typical Output Characteristics

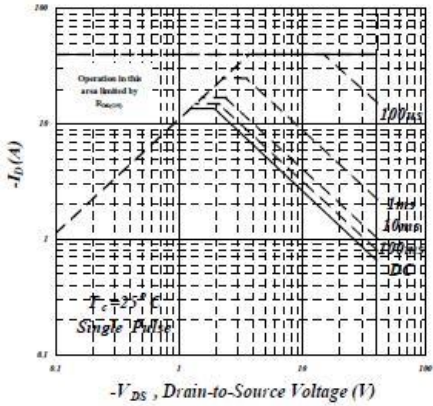


Fig 3. On-Resistance v.s. Gate Voltage

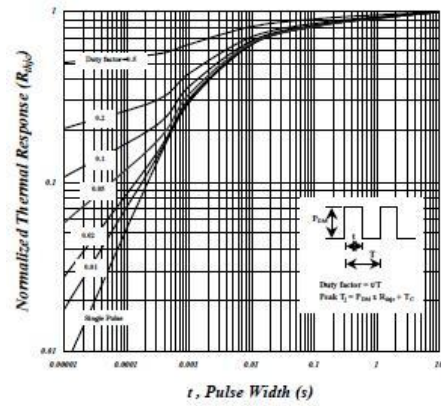


Fig 4. Normalized On-Resistance v.s. Junction Temperature

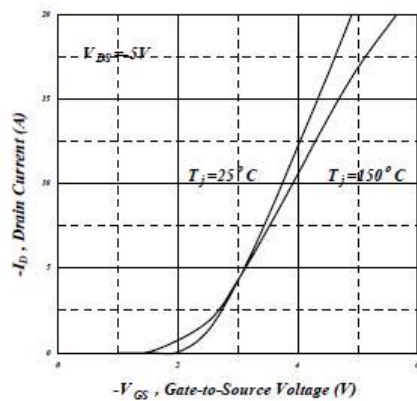


Fig 5. Forward Characteristic of Reverse Diode

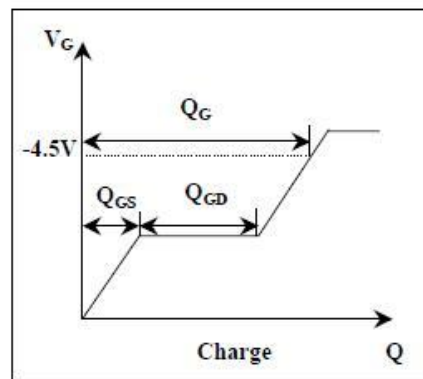
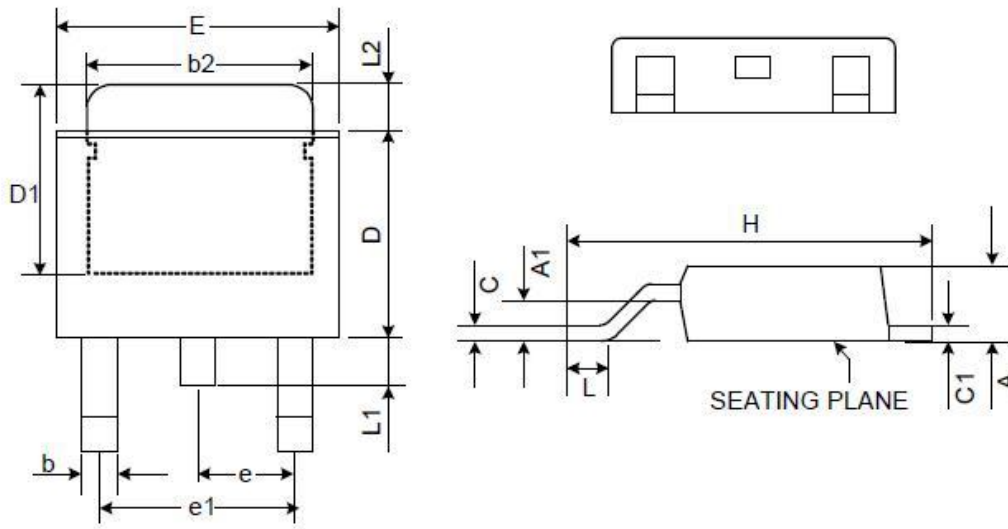


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

❖ PACKAGE OUTLINES



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	2.18	2.29	2.40	0.086	0.090	0.094
A1	0.89	-	1.14	0.035	-	0.045
b	0.61 TYP.			0.024 TYP.		
b2	5.20	5.35	5.50	0.205	0.211	0.217
C	0.45	0.52	0.58	0.018	0.020	0.023
C1	0.45	0.52	0.58	0.018	0.020	0.023
D	5.40	5.57	6.20	0.213	0.219	0.244
D1	4.57	4.77	4.97	0.180	0.188	0.196
E	6.35	6.58	6.80	0.250	0.259	0.268
e	2.28 BSC.			0.090 BSC.		
e1	4.57 BSC.			0.180 BSC.		
H	9.00	9.70	10.40	0.354	0.382	0.409
L	0.51	-	-	0.020	-	-
L1	0.64	0.83	1.02	0.025	0.033	0.040
L2	0.88	-	1.27	0.035	-	0.050

Part Marking Information and Packing: TO-252

Laser Marking

