



ESD



TVS



MOS



LDO



Diode



Sensor



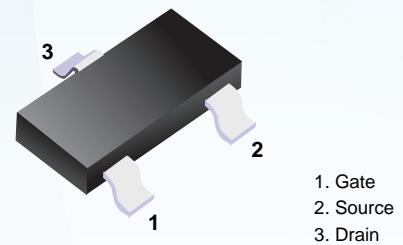
DC-DC

Product Specification

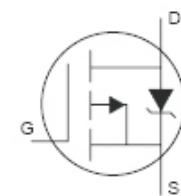
▶ Domestic Part Number	IRLML6401
▶ Overseas Part Number	IRLML6401
▶ Equivalent Part Number	IRLML6401



EV is the abbreviation of name EVVO

■ P-Channel Enhancement MOSFET

■ Features

- Ultra low on-resistance.
- P-Channel MOSFET.
- Fast switching.

■ Simplified outline(SOT-23)

■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	-12	V
Gate-Source Voltage	V _{GS}	±8	
Continuous Drain Current V _{GS} =4.5V @ T _A =25°C	I _D	-4.3	A
Continuous Drain Current V _{GS} =4.5V@ T _A =70°C		-3.4	
Pulsed Drain Current a	I _{DM}	-34	W
Power Dissipation @ T _A =25°C	P _D	1.3	
Power Dissipation @ T _A =70°C		0.8	
Single Pulse Avalanche Energy b	E _{AS}	33	mJ
Thermal Resistance.Junction- to-Ambient	R _{thJA}	100	°C/W
Linear Derating Factor		0.01	W/°C
Junction Temperature	T _J	150	°C
Junction and Storage Temperature Range	T _{stg}	-55 to 150	

Notes:

a.Repetitive Rating :Pulse width limited by maximum junction temperature

b.Starting T_J=25°C, L=3.5mH, R_G=25Ω, I_{AS}=-4.3A

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$I_D=-250 \mu\text{A}, V_{GS}=0\text{V}$	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-12\text{V}, V_{GS}=0\text{V}$			-1	μA
		$V_{DS}=-9.6\text{V}, V_{GS}=0\text{V}, T_J=55^\circ\text{C}$			-25	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 8\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS}=V_{GS}, I_D=-250 \mu\text{A}$	-0.4	-0.55	-0.95	V
Static Drain-Source On-Resistance	$R_{DS(\text{on})}$	$V_{GS}=-4.5\text{V}, I_D=4.3\text{A}$			50	$\text{m}\Omega$
		$V_{GS}=-2.5\text{V}, I_D=2.5\text{A}$			85	
		$V_{GS}=-1.8\text{V}, I_D=2\text{A}$			125	
Forward Transconductance	g_{FS}	$V_{DS}=-10\text{V}, I_D=4.3\text{A}$	8.6			S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}, V_{DS}=-10\text{V}, f=1\text{MHz}$		830		pF
Output Capacitance	C_{oss}			180		
Reverse Transfer Capacitance	C_{rss}			125		
Total Gate Charge	Q_g	$V_{GS}=-5.0\text{V}, V_{DS}=-10\text{V}, I_D=-4.3\text{A}$		10	15	nC
Gate Source Charge	Q_{gs}			1.4	2.1	
Gate Drain Charge	Q_{gd}			2.6	3.9	
Turn-On Delay Time	$t_{d(on)}$	$I_D=-1.0\text{A}, V_{DS}=-6.0\text{V}, R_L=6\Omega, R_{GEN}=89\Omega$		11		ns
Turn-On Rise Time	t_r			32		
Turn-Off Delay Time	$t_{d(off)}$			250		
Turn-Off Fall Time	t_f			210		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-1.3\text{A}, dI/dt=-100\text{A}/\mu\text{s}$		22	33	
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=-1.3\text{A}, dI/dt=-100\text{A}/\mu\text{s}$		8	12	Nc
Maximum Body-Diode Continuous Current	I_S				1.3	A
Diode Forward Voltage	V_{SD}	$I_S=-1.3\text{A}, V_{GS}=0\text{V}$			-1.2	V

■ Typical Characteristics

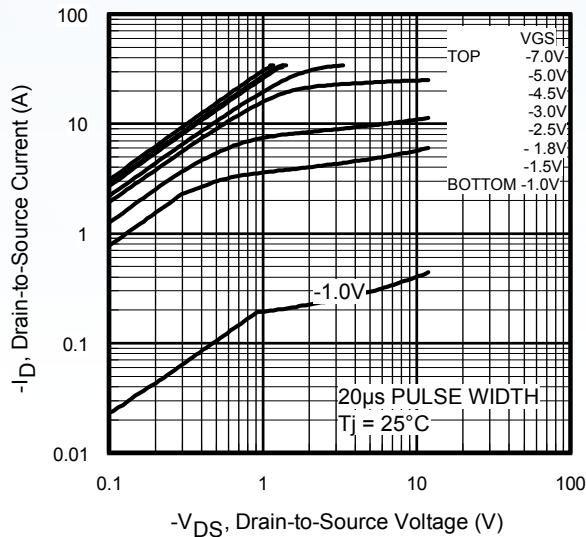


Fig 1. Typical Output Characteristics

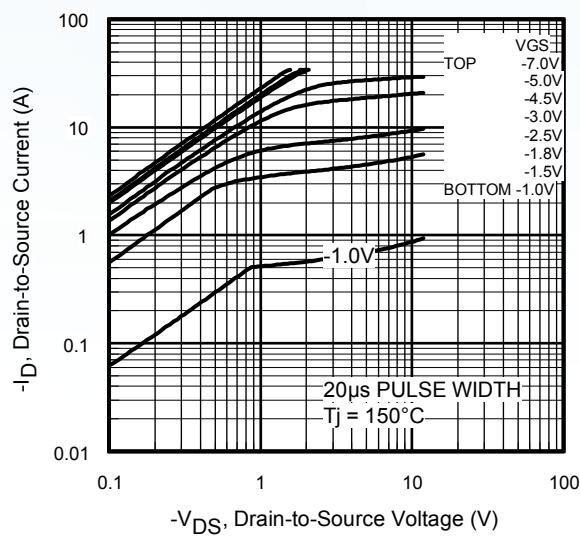


Fig 2. Typical Output Characteristics

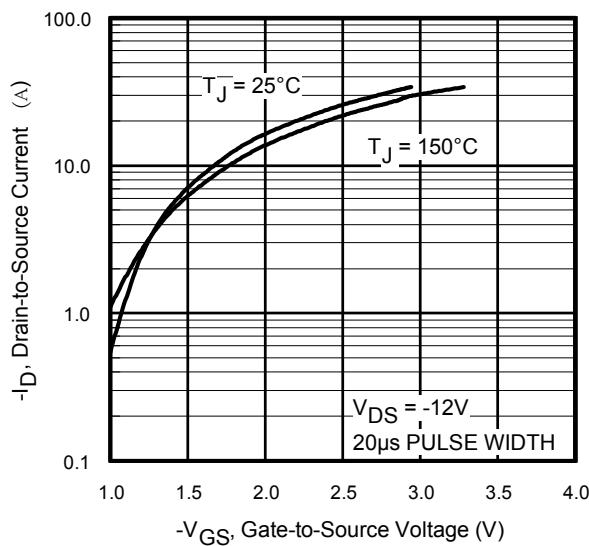


Fig 3. Typical Transfer Characteristics

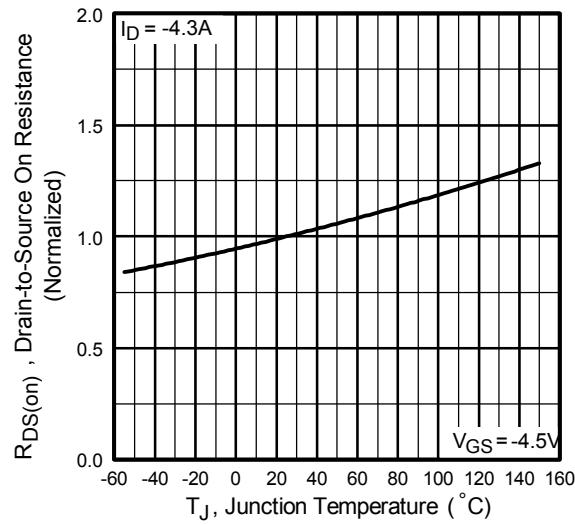


Fig 4. Normalized On-Resistance
Vs. Temperature

■ Typical Characteristics

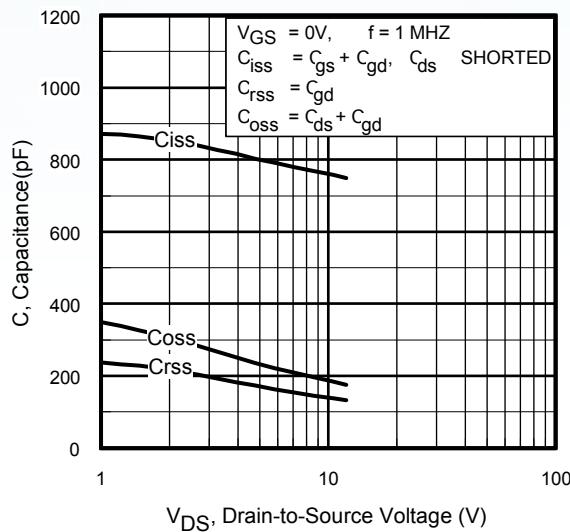


Fig 5. Typical Capacitance Vs.
Drain-to-Source Voltage

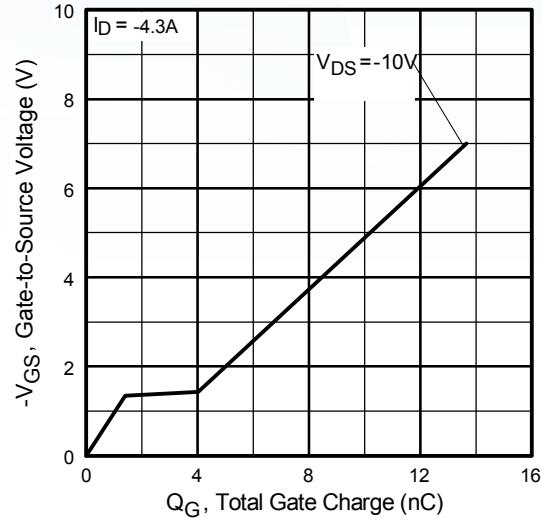


Fig 6. Typical Gate Charge Vs.
Gate-to-Source Voltage

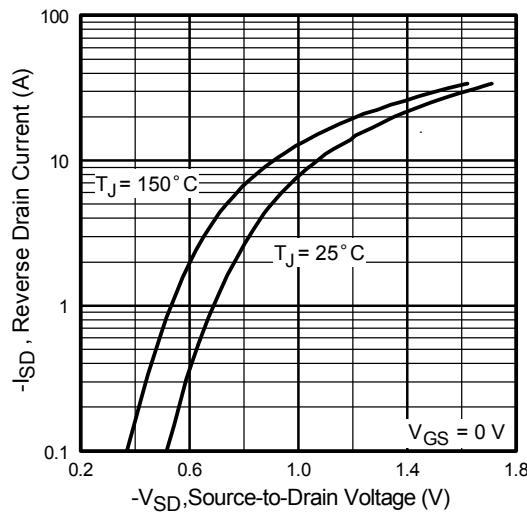


Fig 7. Typical Source-Drain Diode
Forward Voltage

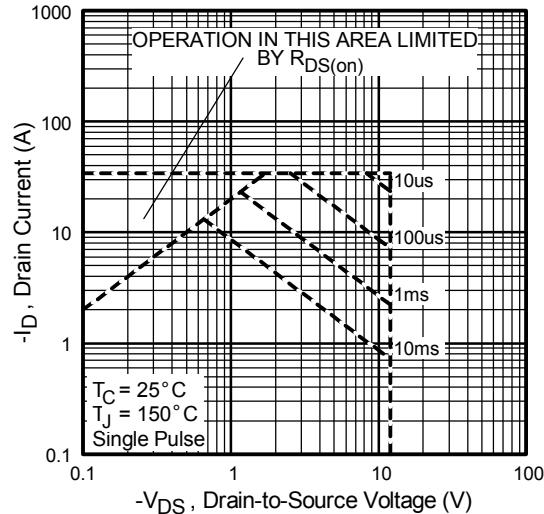


Fig 8. Maximum Safe Operating Area

■ Typical Characteristics

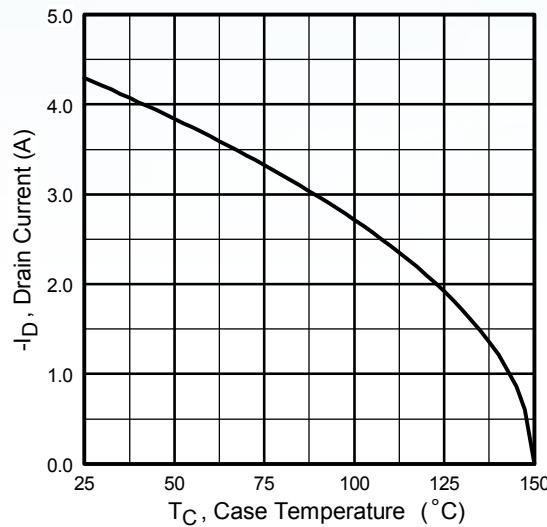


Fig 9. Maximum Drain Current Vs.
Case Temperature

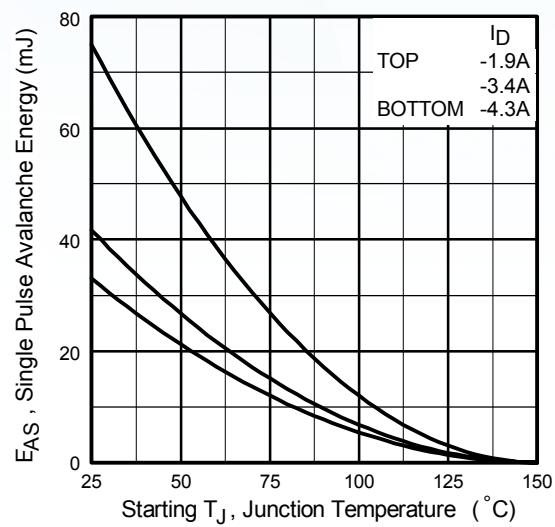


Fig 10. Maximum Avalanche Energy
Vs. Drain Current

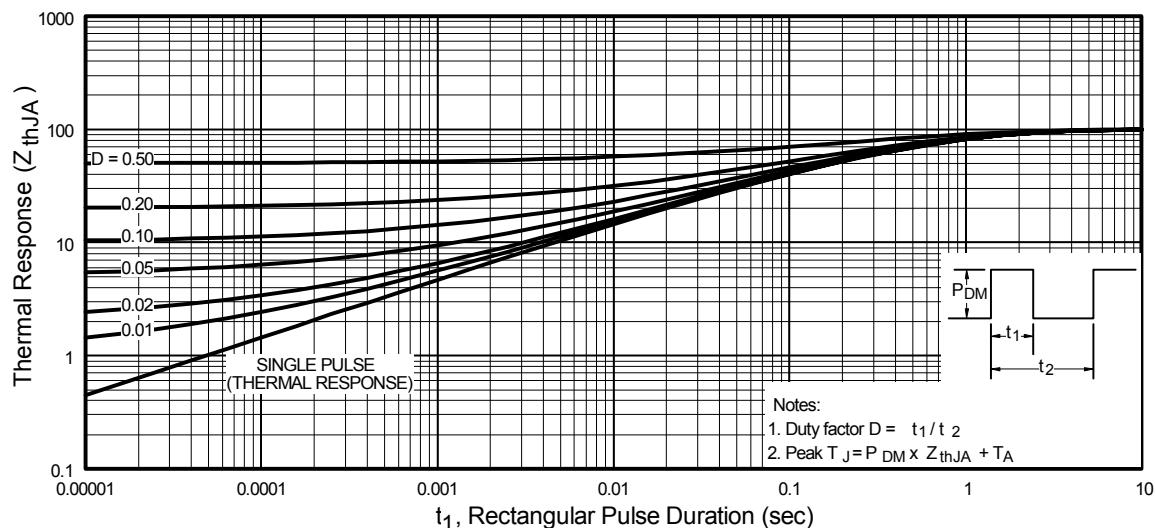


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

■ Typical Characteristics

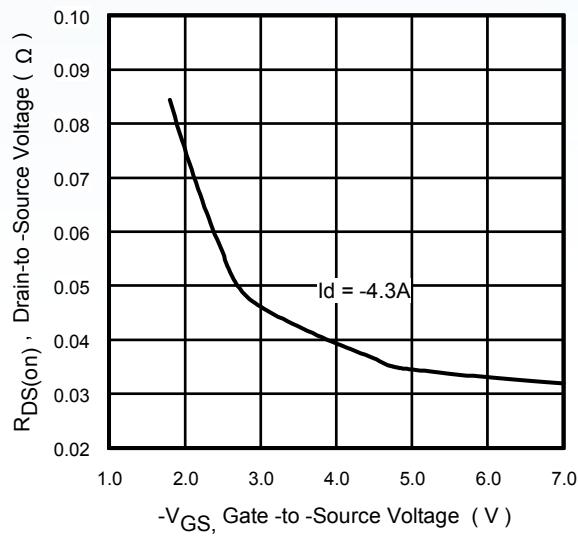


Fig 12. Typical On-Resistance Vs.
Gate Voltage

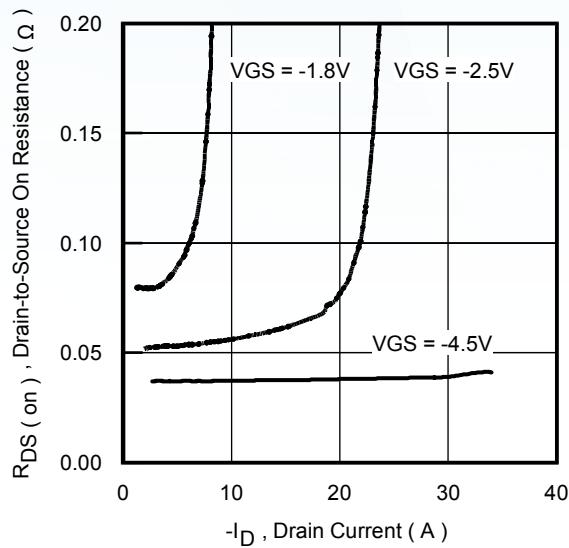


Fig 13. Typical On-Resistance Vs.
Drain Current

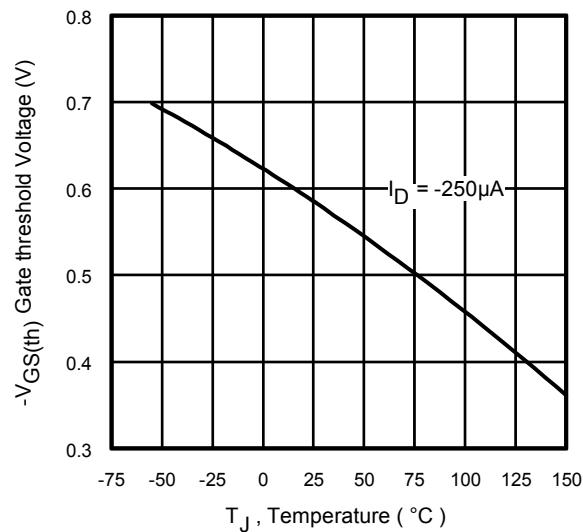
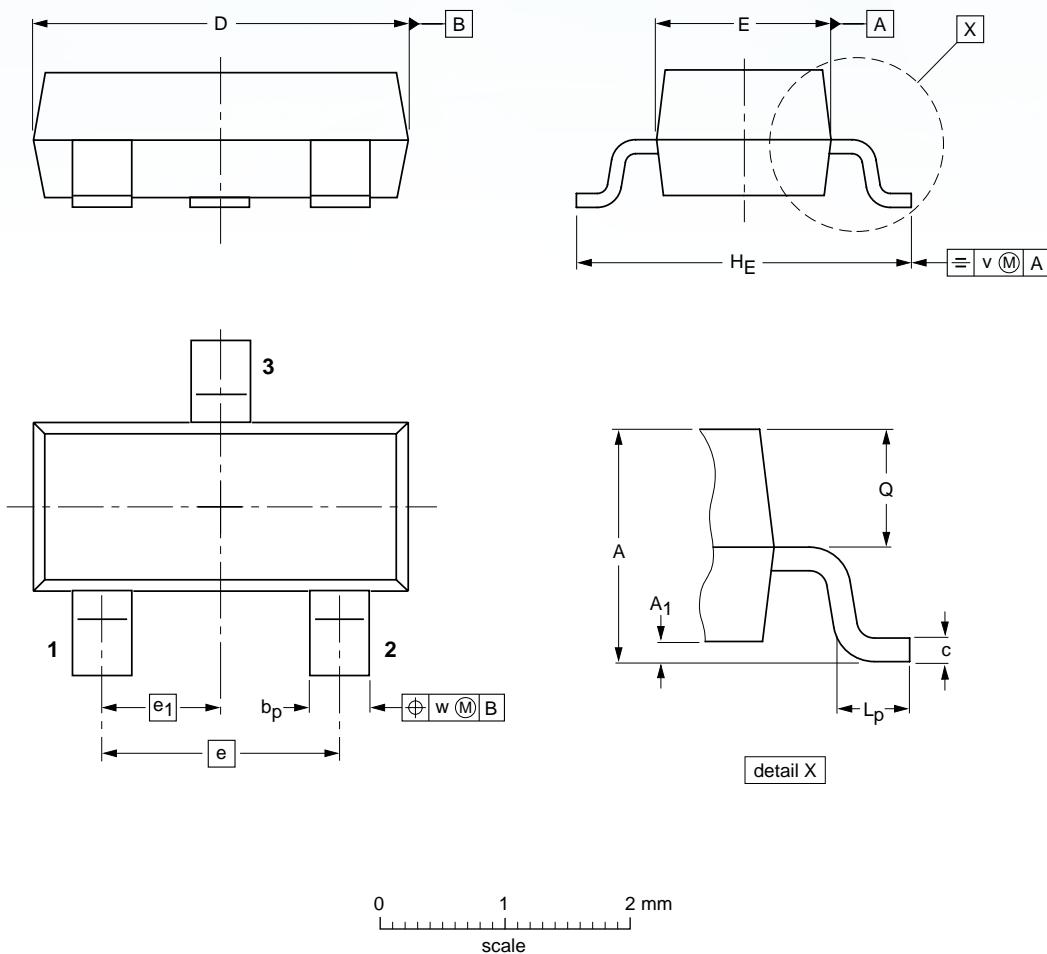


Fig 14. Typical Threshold Voltage Vs.
Junction Temperature

■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

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