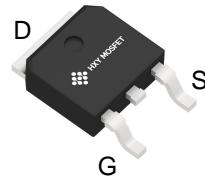




Description

The HIRLR3636TRPBF uses advanced trench technology

to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



**TO-252-2L
(DPAK)**

General Features

$V_{DS} = 60V$ $I_D = 80A$

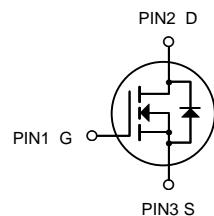
$R_{DS(ON)} < 8m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HIRLR3636TRPBF	TO-252-2L(DPAK)	HXY MOSFET	2500

Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	80	A
$I_D @ T_c=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	43	A
I_{DM}	Pulsed Drain Current ²	272	A
I_{AS}	Avalanche Current	28	A
$P_D @ T_c=25^\circ C$	Total Power Dissipation ⁴	104	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	62.5	$^\circ C/W$



Electrical Characteristics@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{D}}=250\text{uA}$	60	-	-	V
$\text{R}_{\text{DS(ON)}}$	Static Drain-Source On-Resistance ²	$\text{V}_{\text{GS}}=10\text{V}$, $\text{I}_{\text{D}}=45\text{A}$	-	6	8	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4.5\text{V}$, $\text{I}_{\text{D}}=30\text{A}$	-	8.3	15	$\text{m}\Omega$
$\text{V}_{\text{GS(th)}}$	Gate Threshold Voltage	$\text{V}_{\text{DS}}=\text{V}_{\text{GS}}$, $\text{I}_{\text{D}}=250\text{uA}$	1	1.4	3	V
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=10\text{V}$, $\text{I}_{\text{D}}=30\text{A}$	-	71	-	S
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=60\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$	-	-	10	uA
	Drain-Source Leakage Current ($T_j=125^\circ\text{C}$)	$\text{V}_{\text{DS}}=48\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$	-	-	250	uA
I_{GSS}	Gate-Source Leakage	$\text{V}_{\text{GS}}=\pm 20\text{V}$, $\text{V}_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Q_{g}	Total Gate Charge	$\text{I}_{\text{D}}=30\text{A}$	-	33	45	nC
Q_{gs}	Gate-Source Charge	$\text{V}_{\text{DS}}=48\text{V}$	-	5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$\text{V}_{\text{GS}}=4.5\text{V}$	-	21	-	nC
$\text{t}_{\text{d(on)}}$	Turn-on Delay Time	$\text{V}_{\text{DS}}=30\text{V}$	-	10	-	ns
t_r	Rise Time	$\text{I}_{\text{D}}=30\text{A}$	-	43	-	ns
$\text{t}_{\text{d(off)}}$	Turn-off Delay Time	$\text{R}_{\text{G}}=3.3\Omega$	-	47	-	ns
t_f	Fall Time	$\text{V}_{\text{GS}}=10\text{V}$	-	80	-	ns
C_{iss}	Input Capacitance		-	2680	3300	pF
C_{oss}	Output Capacitance	$\text{V}_{\text{GS}}=0\text{V}$	-	260	-	pF
C_{rss}	Reverse Transfer Capacitance	$\text{V}_{\text{DS}}=25\text{V}$ $f=1.0\text{MHz}$	-	180	-	pF
V_{SD}	Forward On Voltage ²	$\text{I}_{\text{S}}=45\text{A}$, $\text{V}_{\text{GS}}=0\text{V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$\text{I}_{\text{S}}=10\text{A}$, $\text{V}_{\text{GS}}=0\text{V}$, $d\text{I}/dt=100\text{A}/\mu\text{s}$	-	30	-	ns
Q_{rr}	Reverse Recovery Charge		-	18	-	nC



Typical Performance Characteristics

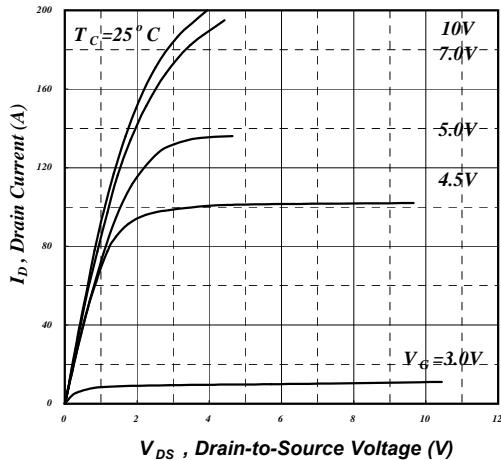


Fig 1. Typical Output Characteristics

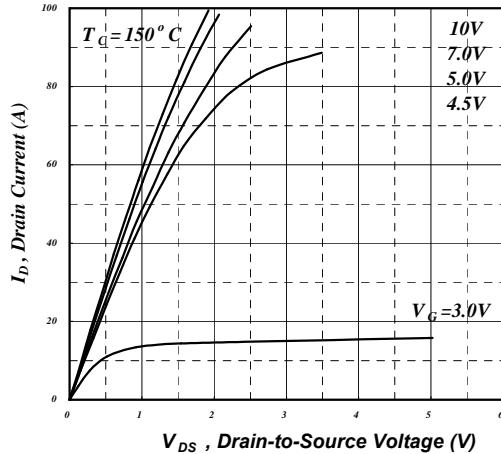


Fig 2. Typical Output Characteristics

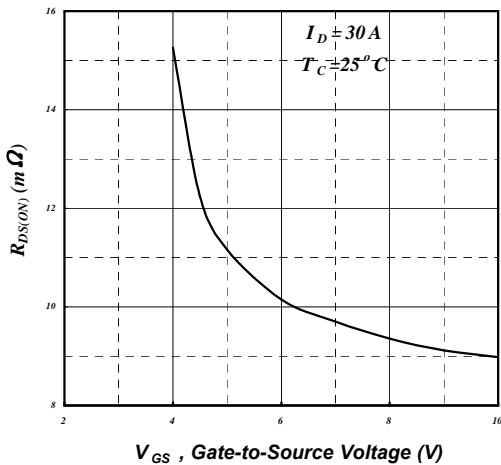


Fig 3. On-Resistance v.s. Gate Voltage

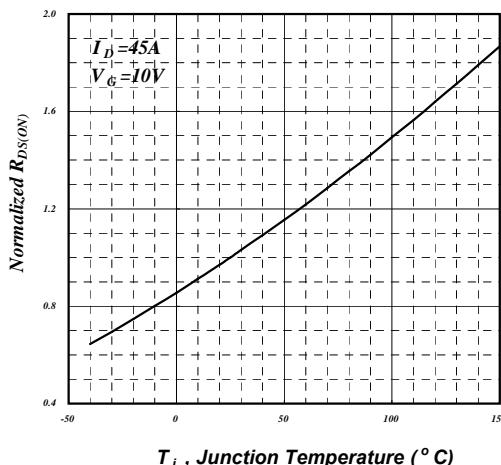


Fig 4. Normalized On-Resistance v.s. Junction Temperature

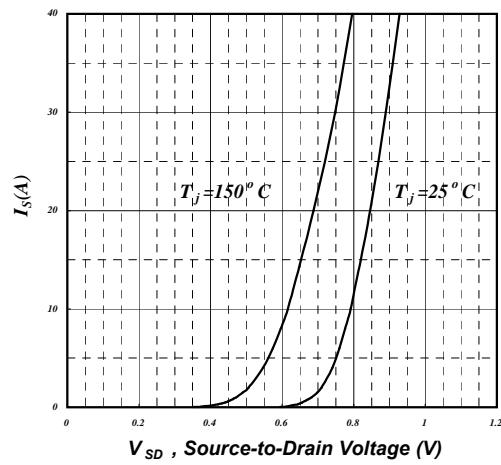


Fig 5. Forward Characteristic of Reverse Diode

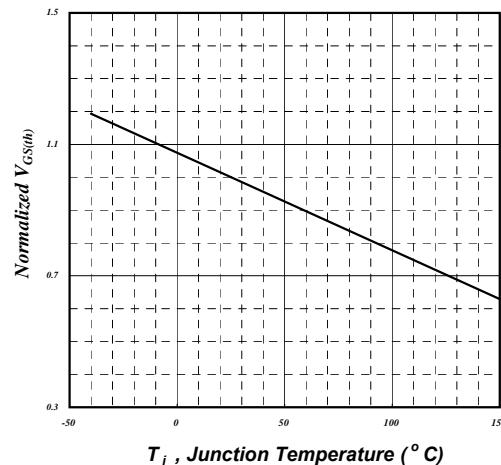
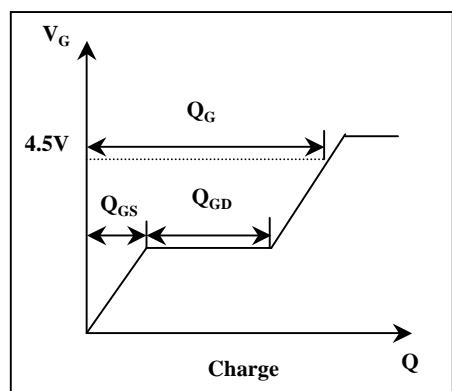
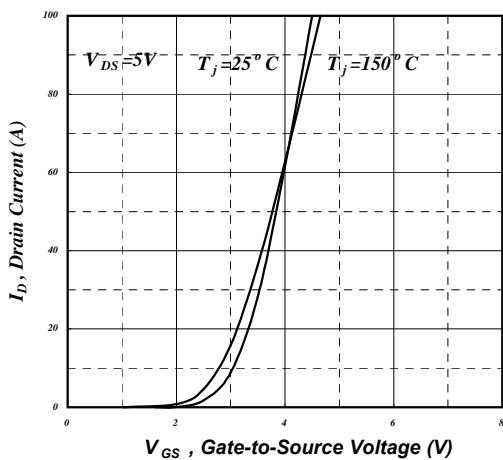
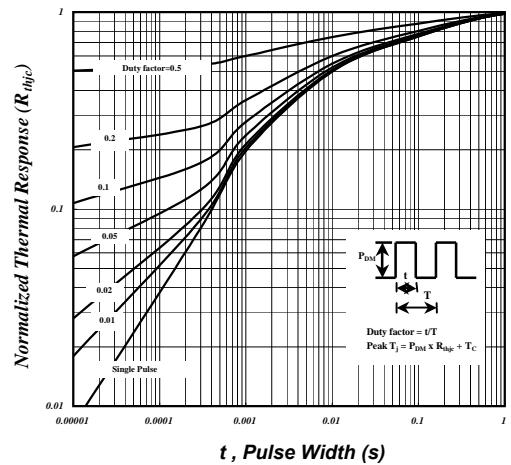
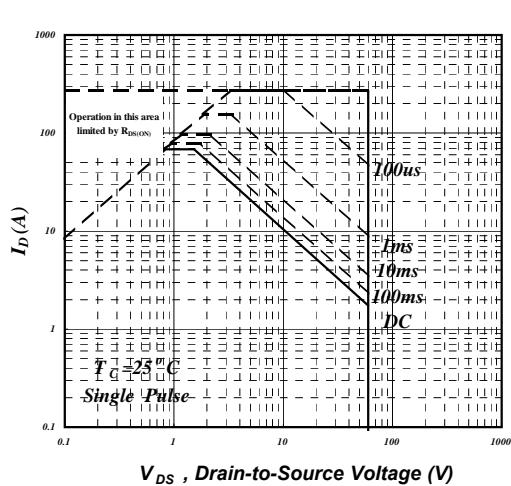
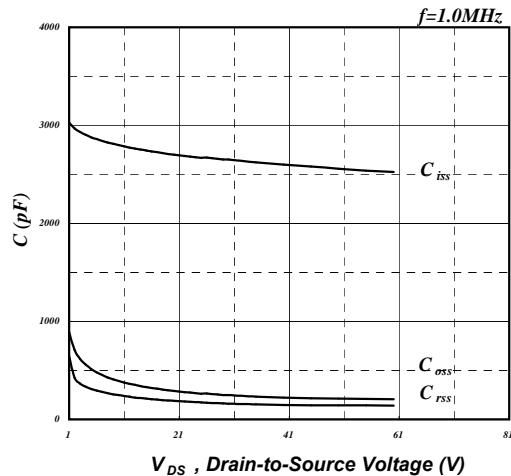
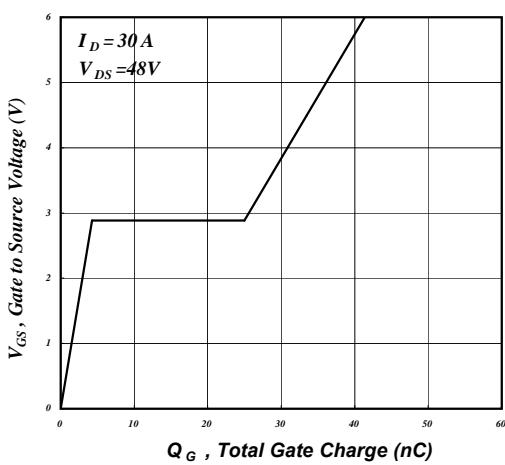
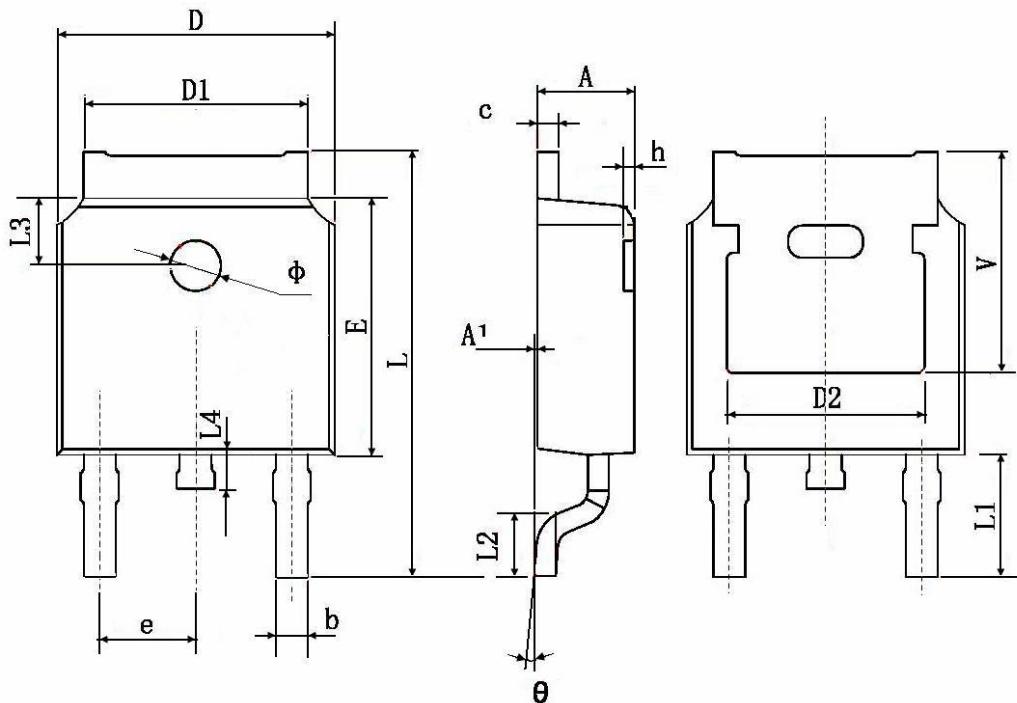


Fig 6. Gate Threshold Voltage v.s. Junction Temperature





TO 252-2L(DPAK) Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	



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