PLN-IRLR7833TRPBF

N-CHANNEL MOSFET

FEATURES

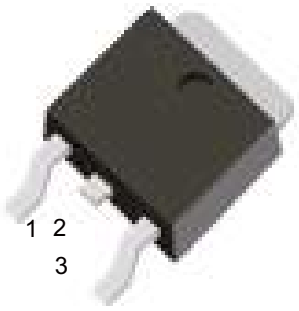
- $R_{DS(on)}$*Q_g industry's benchmark
- Conduction losses reduced
- Switching losses reduced
- Low threshold device

PRODUCT CHARACTERISTICS

VDSS	30V
R_{DS}(on)typ(@V_{GS} =4.5 V)	4.5mΩ
R_{DS}(on)typ(@V_{GS} =10 V)	3.4mΩ
Qg@type	50nC
ID	100A

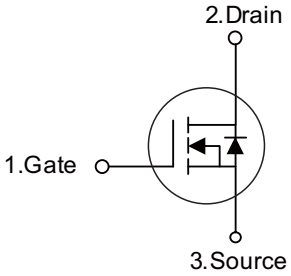
APPLICATIONS

- Switching applications



TO-252

Symbol



ABSOLITE MAXIMUM RATINGS(T_C =25℃, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	100	A
Continuous Drain Current (T_C=100℃)	I_D	70	A
Pulsed Drain Current (Note 2)	I_{DM}	400	A
Single Pulsed Avalanche Current (Note 3)	I_{AS}	35	A
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	400	mJ
Power Dissipation	P_D	50	W
Derate above 25℃		0.4	W/℃
Junction Temperature	T_J	+175	℃
Strong Temperature	T_{STG}	-55 ~ +175	℃

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width limited by maximum junction temperature

3. L = 0.5mH, I_{AS} = 30A, V_{DD} = 25V, R_G = 25Ω, Starting T_J = 25℃.

THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	℃/W
Junction to Case	θ_{JC}	2.5	℃/W

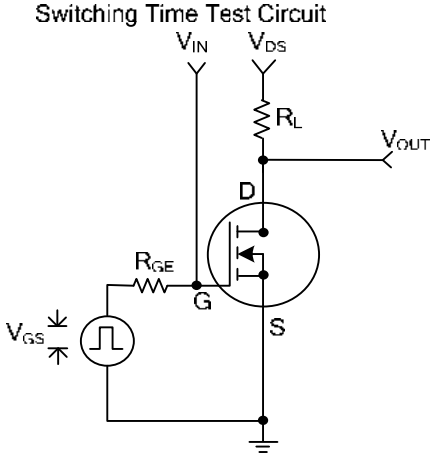
ELECTRICAL CHARACTERISTICS(T_J =25℃, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =250 μA	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30 V,V_{GS} =0 V	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS} =0 V, V_{GS} = ±20 V	-	-	±100	nA
ON CHARACTERISTICS(Note2)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =250 μA	1	-	3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10 V, I_D =20 A	-	3.4	4.5	mΩ
		V_{GS} =4.5 V, I_D =20 A	-	4.7	6	
DYNAMIC PARAMETERS(Note3)						
Input Capacitance	C_{ISS}	V_{DS} =15V, V_{GS} =0V, f=1.0MHz	-	2500	-	pF
Output Capacitance	C_{OSS}		-	300	-	
Reverse Transfer Capacitance	C_{RSS}		-	300	-	
SWITCHING PARAMETERS(Note3)						
Total Gate Charge	Q_G	V_{DS} =15V, V_{GS} =5V, I_D =16A	-	50	-	nC
Gate Source Charge	Q_{GS}		-	20.8	-	
Gate Drain Charge	Q_{GD}		-	19	-	
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=15V, I_D =1A, R_{GEN} =6Ω V_{GS} =10 V	-	25.7	-	ns
Turn-ON Rise Time	t_R		-	10	-	
Turn-OFF Delay Time	$t_{D(OFF)}$		-	128	-	
Turn-OFF Fall-Time	t_F		-	34	-	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=20 A,V_{GS}=0 V	-	-	1.5	V
Drain-Source Diode Forward Current	I_S		-	-	90	A

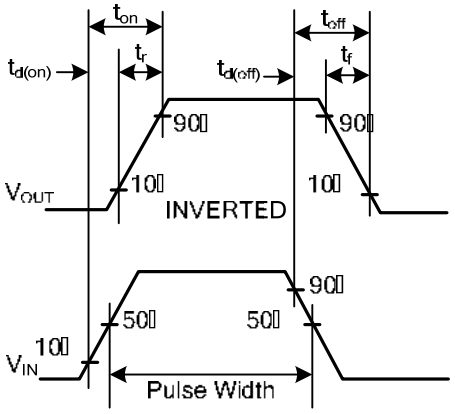
Note: 1. Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%.
2. Guaranteed by design, not subject to production testing.

TEST CIRCUIT AND WAVEFORM

Switching Time Test Circuit

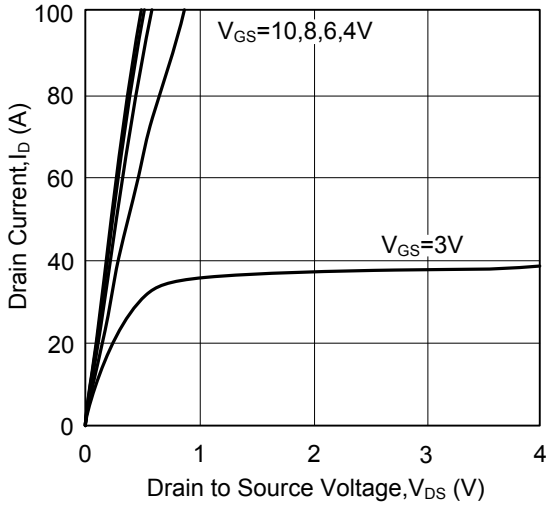


Switching Waveforms

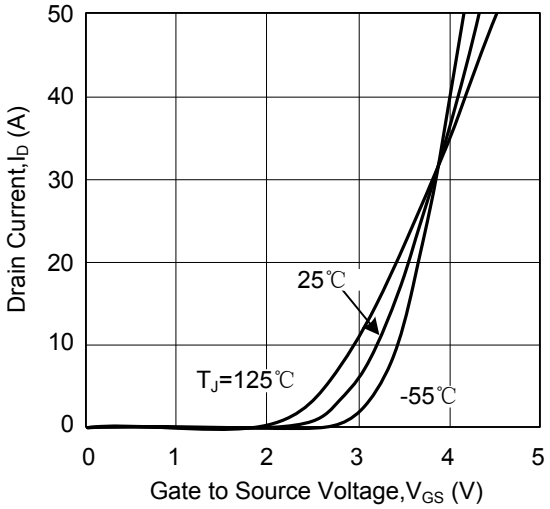


TYPICAL CHARACTERISTICS

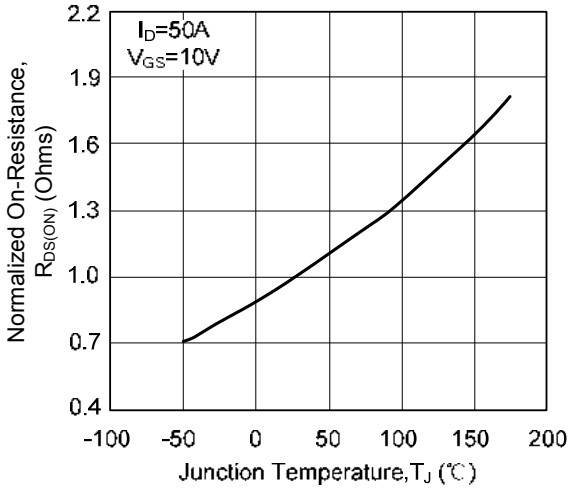
Output Characteristics



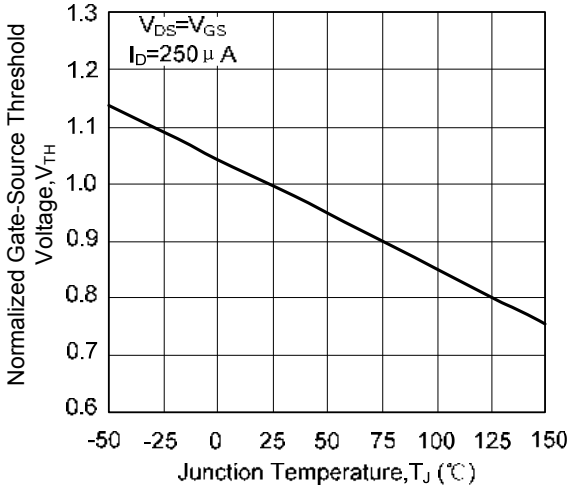
Transfer Characteristics



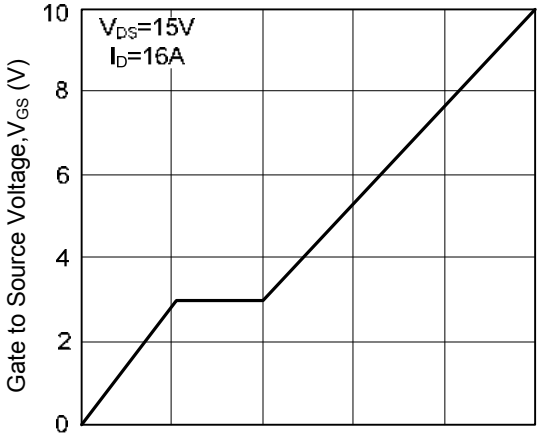
On-Resistance Variation with Temperature



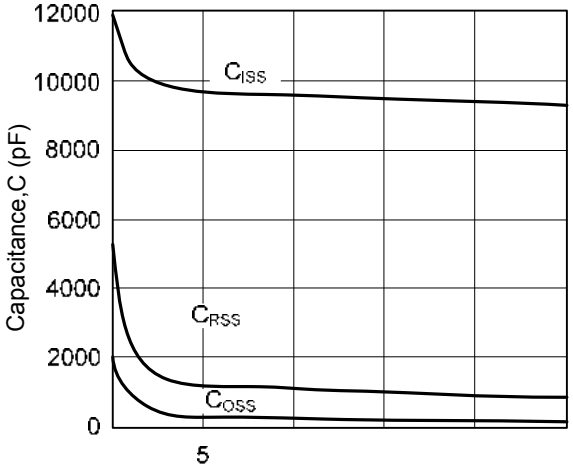
Gate Threshold Variation with Temperature



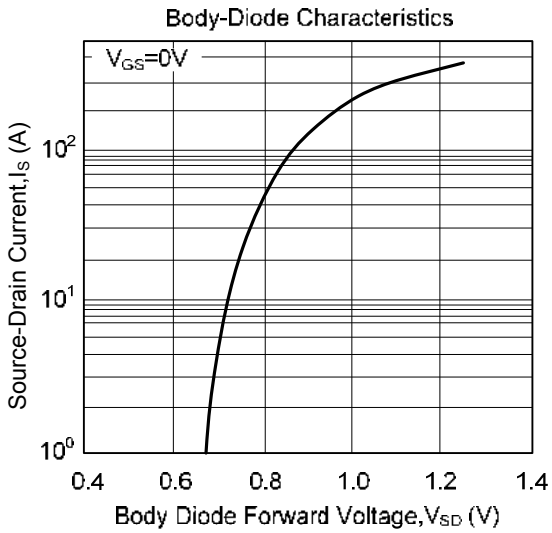
Gate-Charge Characteristics

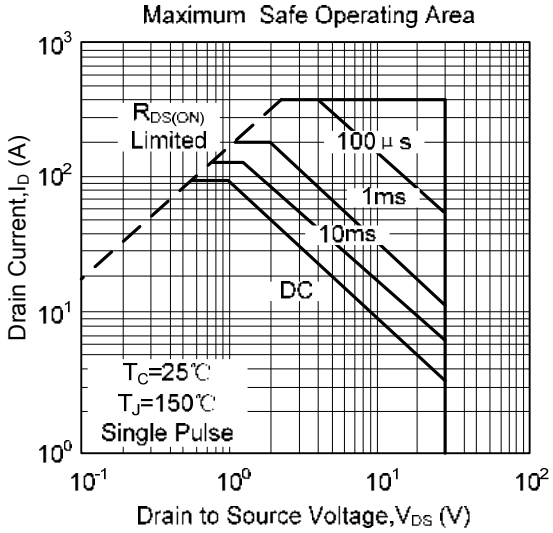


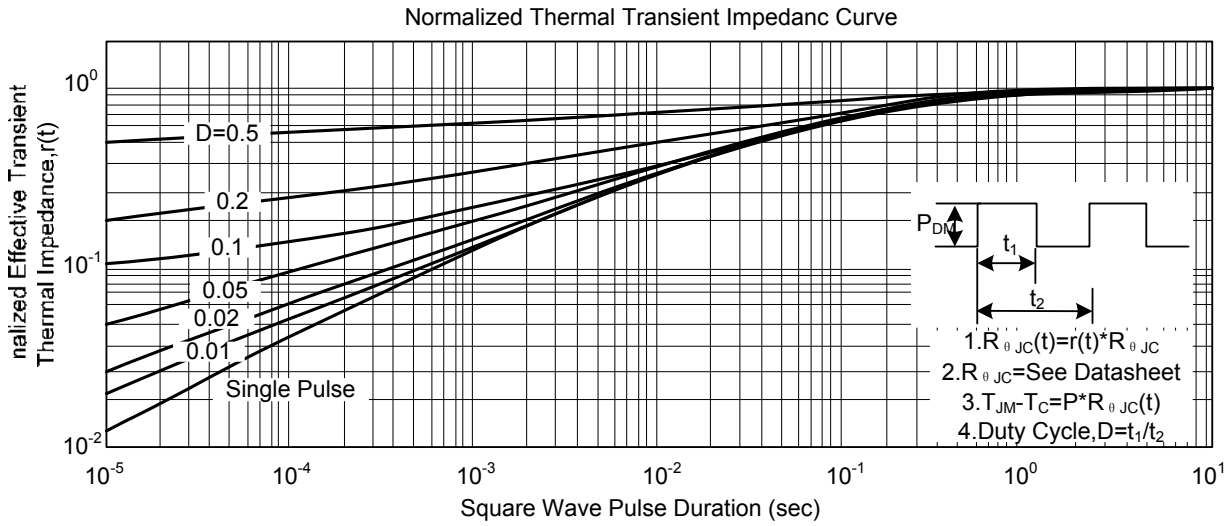
Capacitance Characteristics



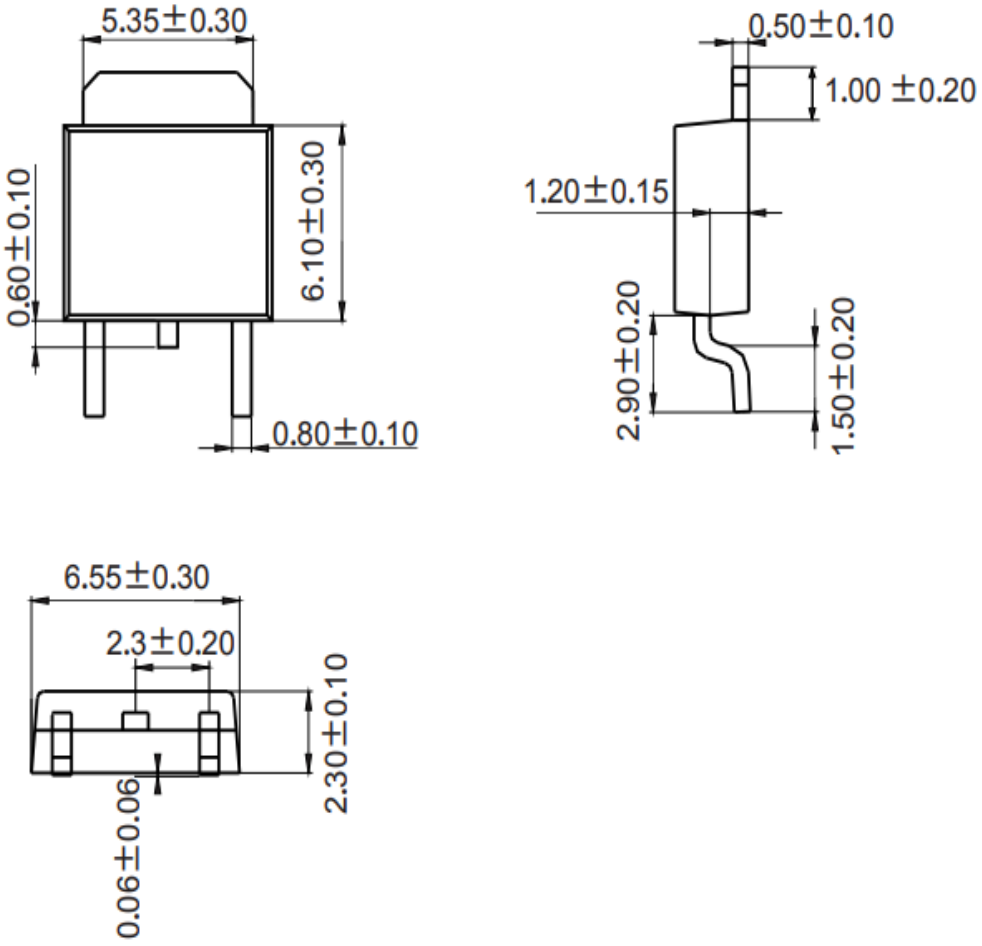
TYPICAL CHARACTERISTICS(Cont.)







Package Outline Dimensions (unit: mm)



Mounting Pad Layout (unit: mm)

