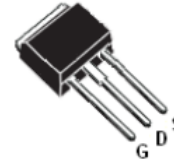


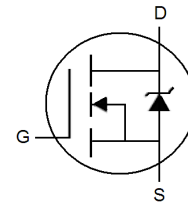
N-CHANNEL Power MOSFET

FEATURES

- V_{DS} :650V, I_D : 4.5A Max.
- $R_{DS(ON)}$:2.5 Ω (max.)@ $V_{GS}=10V, I_D=2.25A$
- High density cell design for ultra low on-resistance
- Fully characterized avalanche voltage and current



TO-251



EQUIVALENT CIRCUIT

MECHANICAL DATA

- Case: TO-251
- Case material: Molded Plastic. UL flammability 94V-0
- Weight:0.33grams(approximate)
- Marking:R5N65

MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Gate-source voltage	V_{GS}	± 30	V
Continuous drain current, $V_{GS}=10V$	I_D	4.5	A
Pulsed drain current (Note 1)	I_{DM}	18	A
Power dissipation	P_D	54	W
Thermal resistance from junction to ambient	$R_{\theta JA}$	160	$^\circ\text{C/W}$
Operating junction and storage temperature	T_J, T_{STG}	-55~+150	$^\circ\text{C}$
Single Pulsed Avalanche Energy (note 1)	E_{AS}	210	mJ
Lead Temperature for Soldering Purposes (1/8" from case for 10s)	T_L	260	$^\circ\text{C}$

Note: 1. E_{AS} condition: $V_{DD}=20V, L=0.5mH, R_G=25\Omega$, Starting $T_J = 25^\circ\text{C}$

N-CHANNEL Power MOSFET
ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	650	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V, T_J = 25^\circ C$	--	--	100	nA
I_{GSS}	Gate-Source Leakage	$V_{GS} = \pm 30V$	--	--	± 100	nA
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	--	4.0	V
$R_{DS(on)}$	Drain-Source On-Resistance (Note3)	$V_{GS} = 10V, I_D = 2.25A$	--	2.0	2.5	Ω
C_{iss}	Input Capacitance	$V_{GS} = 0V,$ $V_{DS} = 25V, f = 1.0MHz$	--	510	--	pF
C_{oss}	Output Capacitance		--	55	--	
C_{rss}	Reverse Transfer Capacitance		--	6.8	--	
Q_g	Total Gate Charge	$V_{DD} = 325V, I_D = 4.5A, V_{GS} = 10V$	--	15	--	nC
Q_{gs}	Gate-Source Charge		--	2.5	--	
Q_{gd}	Gate-Drain Charge		--	6.6	--	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 325V, I_D = 4.5A, R_G = 25\Omega$	--	10	--	ns
t_r	Turn-on Rise Time		--	42	--	
$t_{d(off)}$	Turn-off Delay Time		--	38	--	
t_f	Turn-off Fall Time		--	46	--	
I_S	Continuous Body Diode Current	$T_C = 25^\circ C$	--	--	4.5	A
I_{SM}	Pulsed Diode Forward Current		--	--	18	
V_{SD}	Body Diode Voltage	$T_J = 25^\circ C, I_{SD} = 1.0A, V_{GS} = 0V$	--	--	0.9	V
t_{rr}	Reverse Recovery Time	$V_{GS} = 0V, I_S = 4.5A,$ $di_F/dt = 100A/\mu s$	--	300	--	ns
Q_{rr}	Reverse Recovery Charge		--	2.2	--	μC

N-CHANNEL Power MOSFET

TYPICAL CHARACTERISTICS

Figure 1. Maximum Transient Thermal Impedance

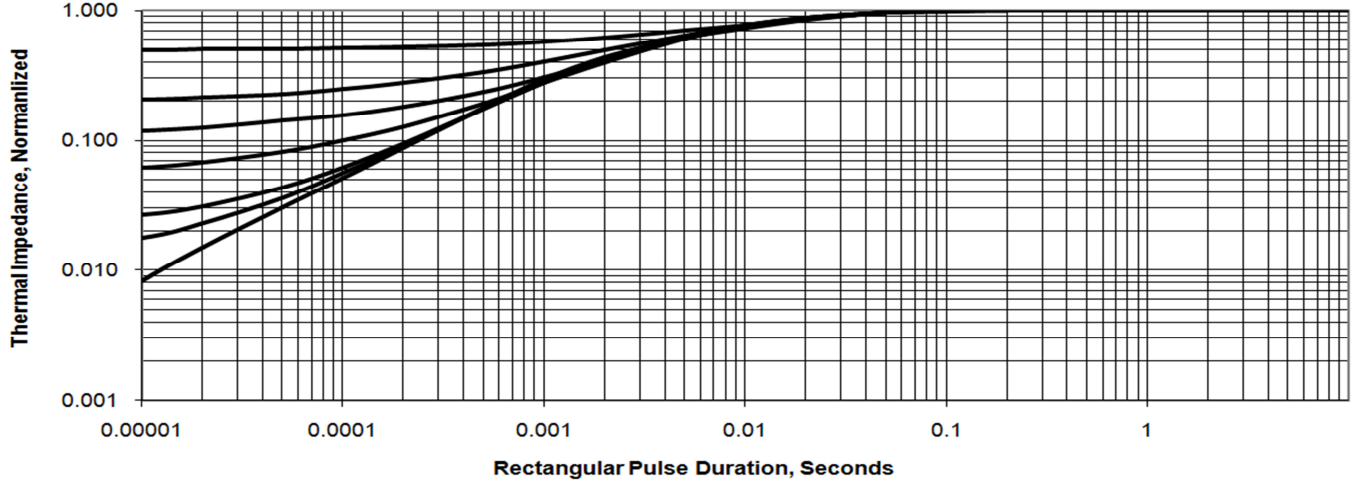


Figure 2. Maximum Power Dissipation vs Case Temperature

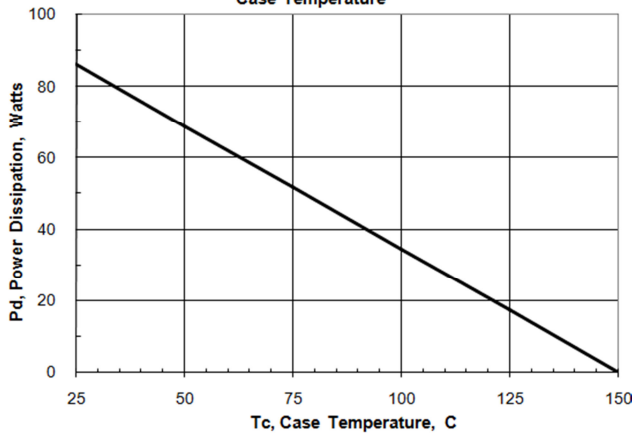


Figure 3. Maximum Continuous Drain Current vs Case Temperature

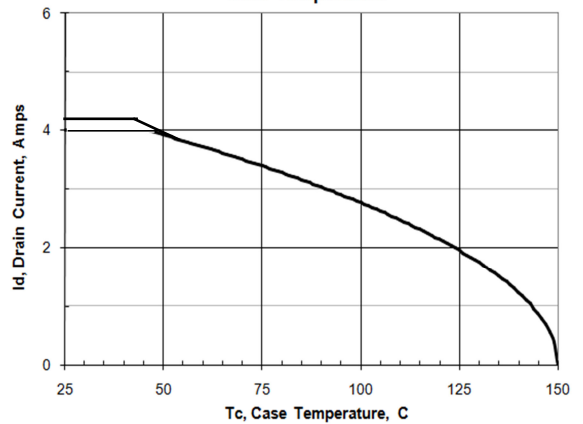


Figure 4. Typical Output Characteristics

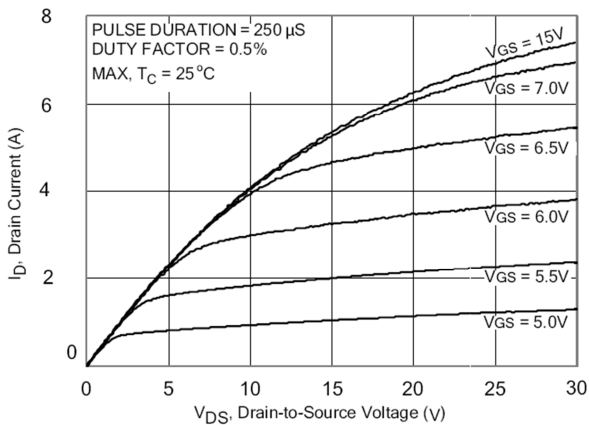
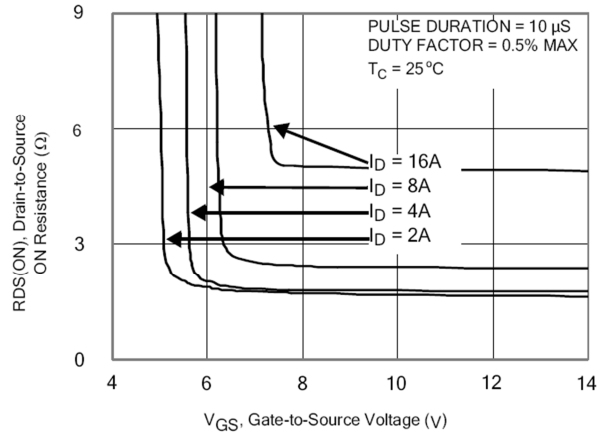
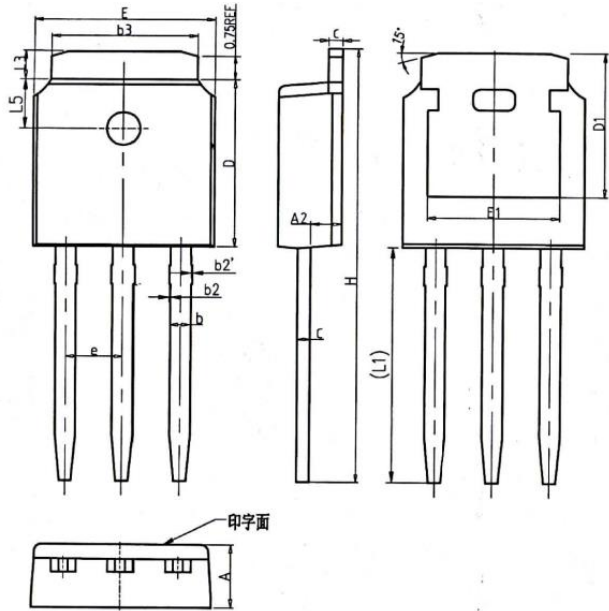


Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current



N-CHANNEL Power MOSFET

TO-251 PACKAGE OUTLINE DIMENSION



COMMON DIMENSIONS			
SYMBOL	MM		
	MIN	NOM	MAX
A	2.20	2.30	2.38
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b2	0.00	0.04	0.10
b2'	0.00	0.04	0.10
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	—	—
e	2.286BSC		
H	16.22	16.52	16.82
L1	9.15	9.40	9.65
L3	0.88	1.02	1.28
L5	1.65	1.80	1.95