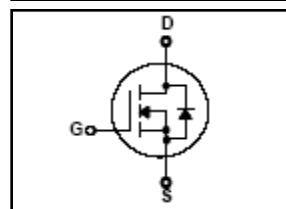
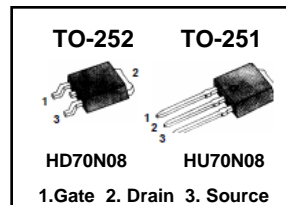




HD70N08 / HU70N08

80V N -Channel MOSFET

$BV_{DSS} = 80V$
 $R_{DS(on) \text{ typ}} = 8.5m \Omega$
 $I_D = 70 A$



FEATURES

- Originative New Design
- Superior Avalanche Rugged Technology
- Robust Gate Oxide Technology
- Very Low Intrinsic Capacitances
- Excellent Switching Characteristics
- Unrivalled Gate Charge : 22 nC (Typ.)
- Extended Safe Operating Area
- Lower $R_{DS(ON)}$: 8.5mΩ (Typ.) @ $V_{GS}=10V$
- 100% Avalanche Tested

Absolute Maximum Ratings $T_C=25^\circ C$ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	80	V
I_D	Drain Current – Continuous ($T_C = 25^\circ C$)	70	A
	Drain Current – Continuous ($T_C = 100^\circ C$)	50A	A
I_{DM}	Drain Current – Pulsed (Note 1)	280	A
V_{GS}	Gate-Source Voltage	± 20	V
E_{AS}	Single Pulsed Avalanche Energy (Note 2)	230	mJ
I_{AR}	Avalanche Current (Note 1)	28	A
E_{AR}	Repetitive Avalanche Energy (Note 1)	20	mJ
dv/dt	Peak Diode Recovery dv/dt (Note 3)	5.8	V/ns
P_D	Power Dissipation ($T_C = 25^\circ C$)	200	W
	– Derate above 25°C	1.3	W/°C
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

Thermal Resistance Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	--	0.85	°C/W
$R_{\theta CS}$	Case-to-Sink	0.5	--	
$R_{\theta JA}$	Junction-to-Ambient	--	62.5	

80V_{DS}/±25V_{GS}/70A(I_D) N-Channel Enhancement Mode MOSFET
Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Typical	Unit	
V _{DSS}	Drain-Source Voltage	80	V	
V _{GSS}	Gate –Source Voltage	±25	V	
I _D	Continuous Drain Current	T _C =100°C	50	A
			70	A
I _{DP}	300us Pulsed Drain Current Tested	280	A	
I _S	Diode Continuous Forward Current	70	A	
T _J	Operating Junction Temperature	175	°C	
T _{STG}	Storage Temperature Range	-55 ~ 175	°C	

Electrical Characteristics (T_A=25°C Unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	80			V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coe			0.073		
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V T _J =85°C			1	uA
					30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V			±100	nA
R _{DS(on)} ¹	Drain-Source On-Resistance	V _{GS} =10V, I _D =40A		8	10	mΩ
Diode Characteristics						
V _{SD} ¹	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V		0.8	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A,		50		ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt=100A/us		90		nC
Dynamic Characteristics²						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, Frequency=1MHz		1.3		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =30V Frequency=1MHz		3000	4200	pF
C _{oss}	Output Capacitance			350		
C _{rss}	Reverse Transfer Capacitance			250		
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, R _L =30Ω I _D =1A, V _{GEN} =10V R _G =6Ω		22	40	ns
t _r	Turn-On Rise Time			14	25	
t _{d(off)}	Turn-Off Delay Time			58	104	
t _f	Turn-Off Fall Time			25	45	
Gate Charge Characteristics²						
Q _g	Total Gate Charge	V _{DS} =40V, V _{GS} =10V I _D =40A		77	108	nC
Q _{gs}	Gate-Source Charge			22		
Q _{gd}	Gate-Drain Charge			23		

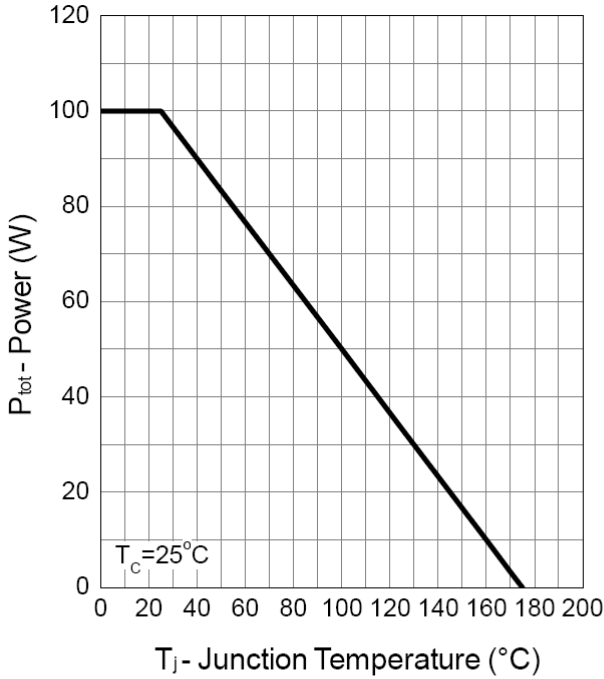
Note: 1: Pulse test ; pulse width ≤ 300ns, duty cycle ≤ 2%.

2: Guaranteed by design, not subject to production testing.

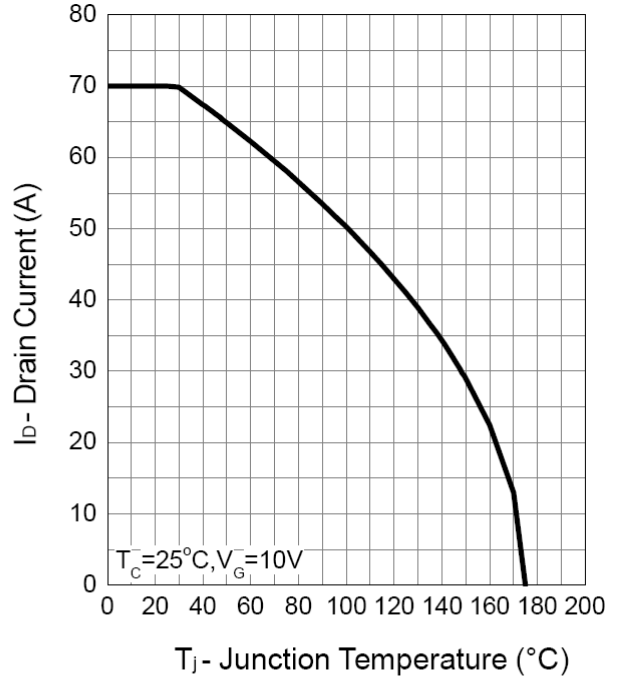
80V_{DS}/±25V_{GS}/70A(I_D) N-Channel Enhancement Mode MOSFET

Typical Characteristics

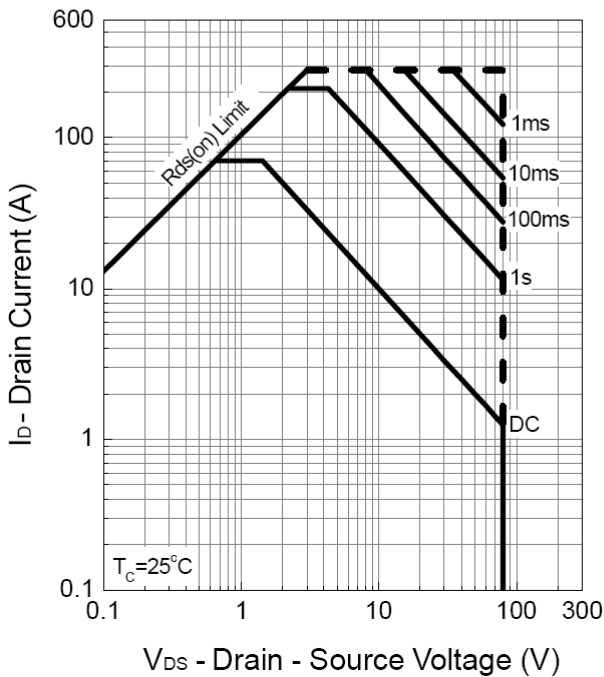
Power Dissipation



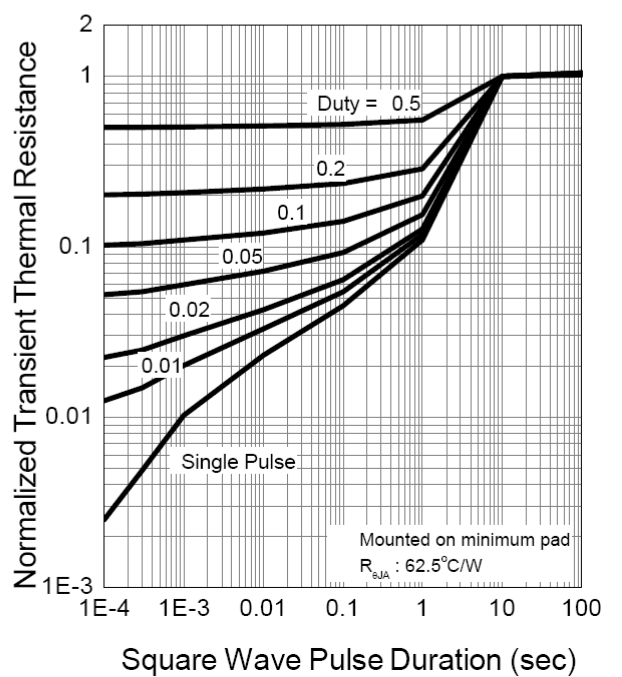
Drain Current



Safe Operation Area



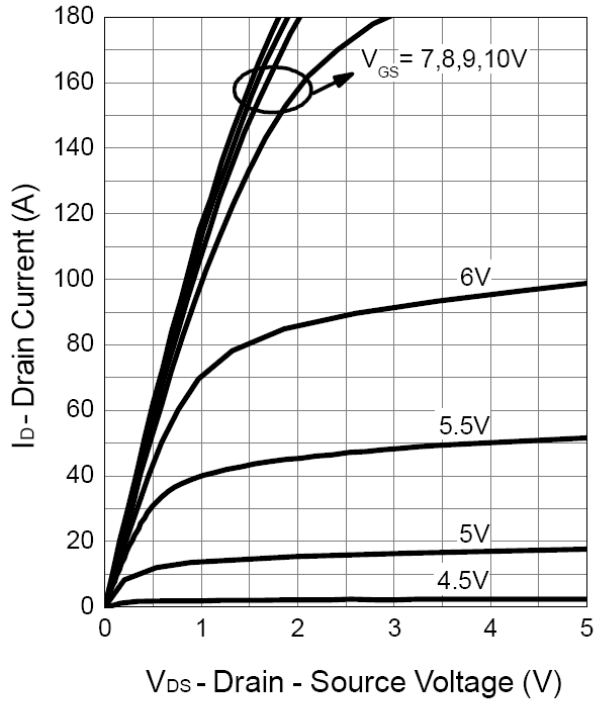
Thermal Transient Impedance



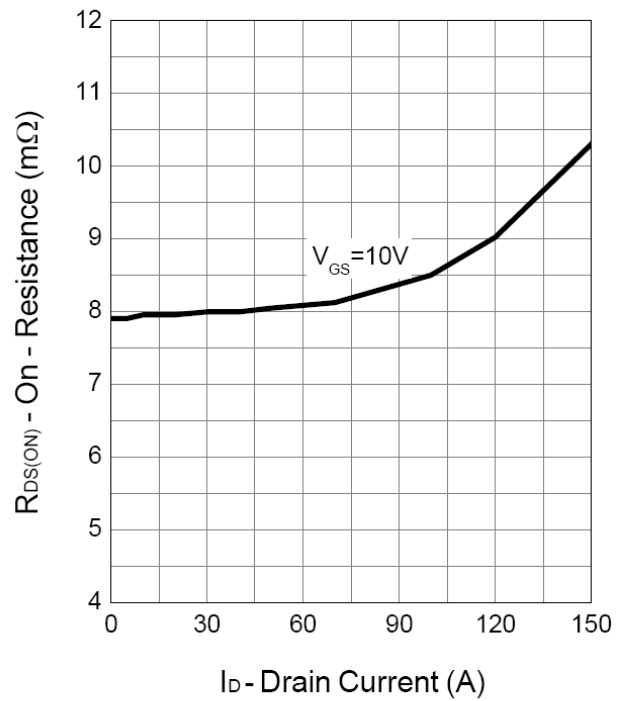
80V_{DS} ±25V_{GS}/70A(I_D) N-Channel Enhancement Mode MOSFET

Typical Characteristics (Cont.)

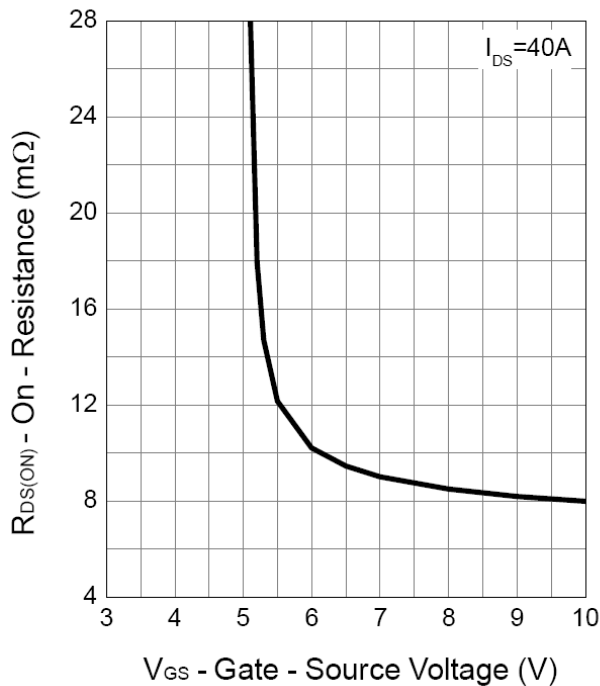
Output Characteristics



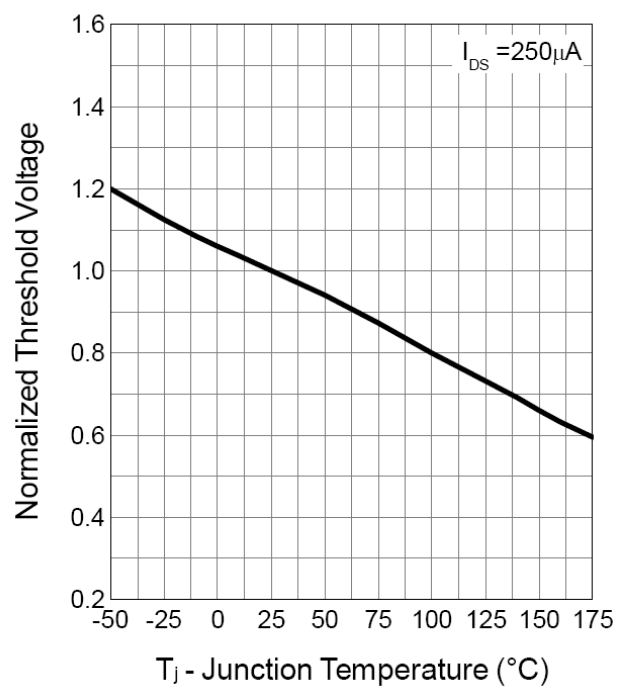
Drain-Source On Resistance



Gate-Source On Resistance



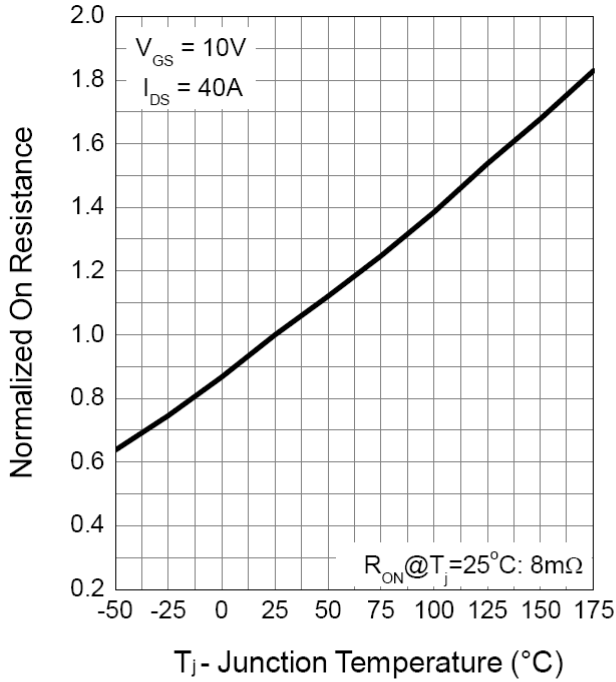
Gate Threshold Voltage



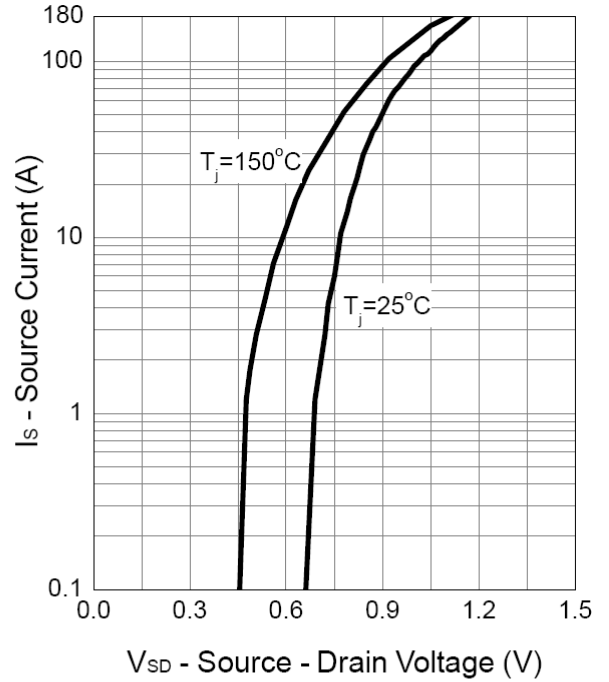
80V_{DS}/±25V_{GS}/70A(I_D) N-Channel Enhancement Mode MOSFET

Typical Characteristics (Cont.)

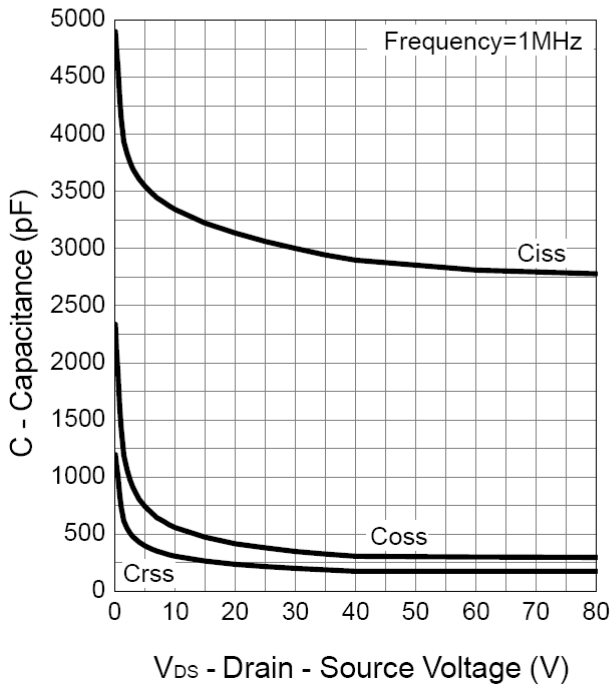
Drain-Source On Resistance



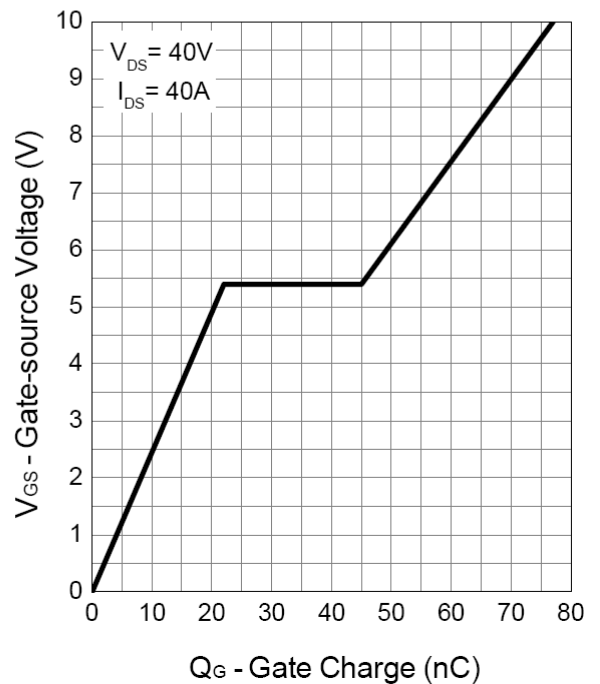
Source-Drain Diode Forward



Capacitance



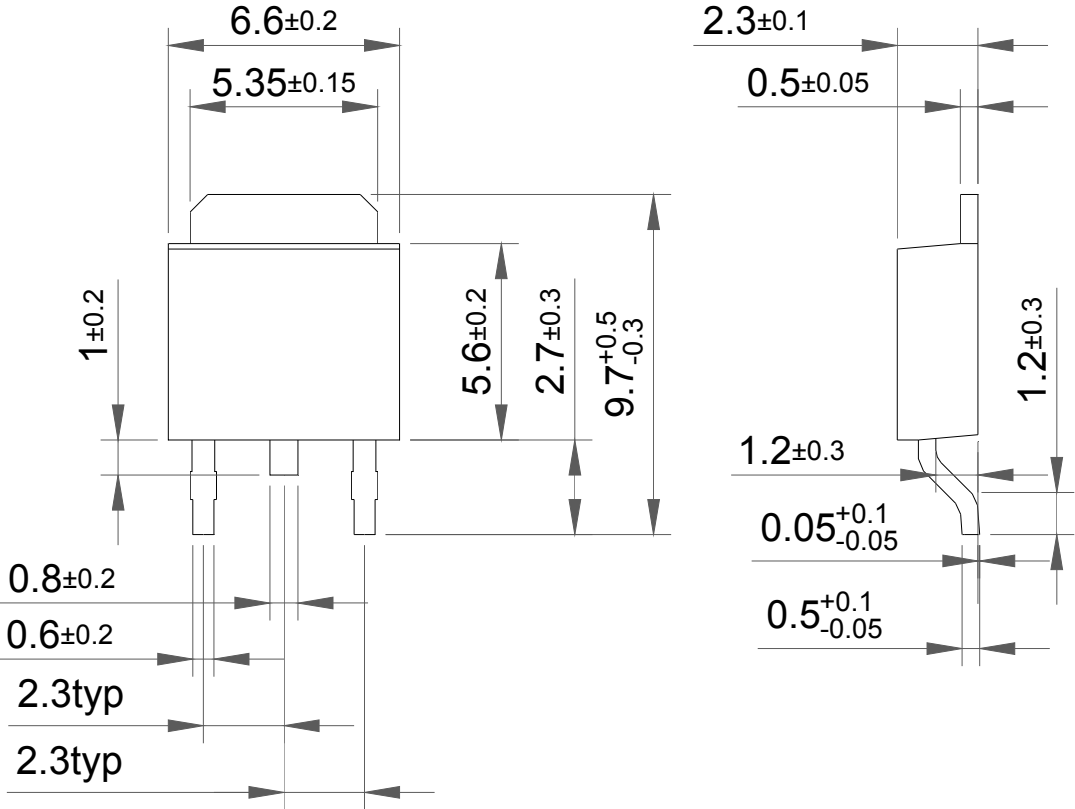
Gate Charge



HD70N08 / HU70N08

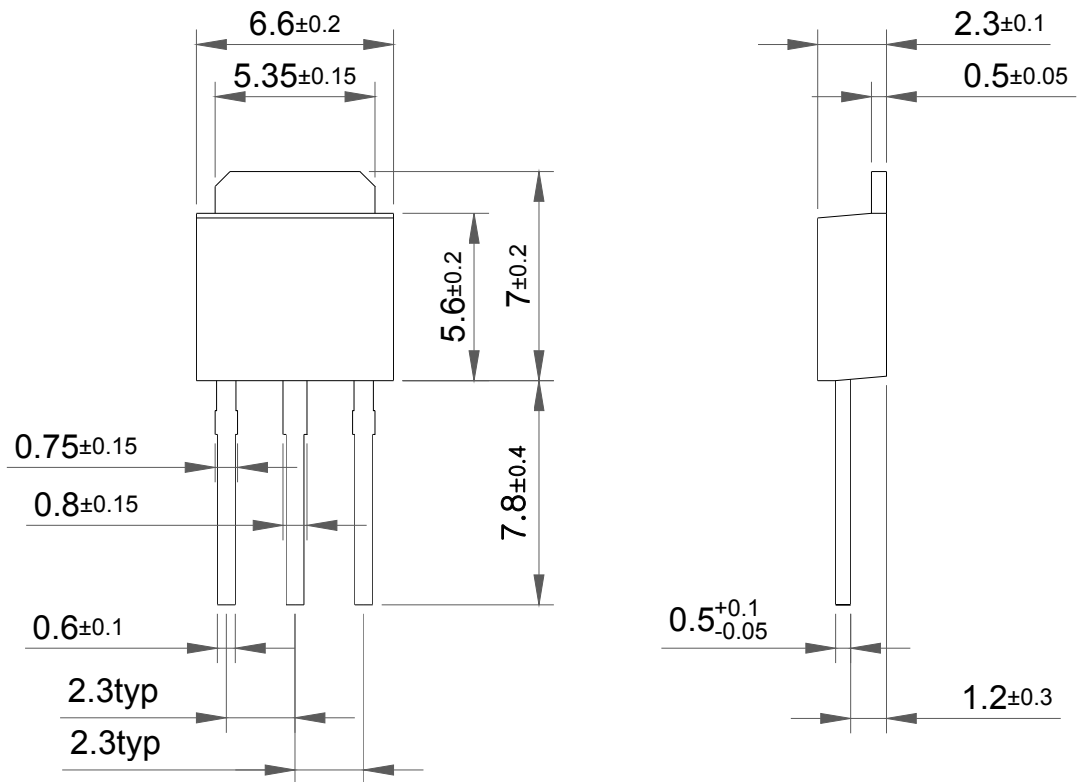
Package Dimension

TO-252



Package Dimension

TO-251



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