Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	0.8Ω@10V	8A

Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

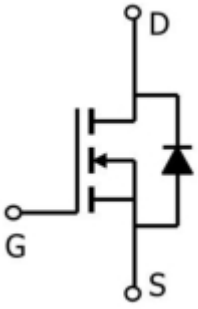
Application

- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

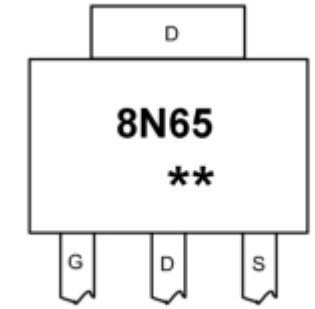
Package

TO-220-3L-C(G:1 D:2 S:3)

Circuit diagram



Marking



8N65 =Device Code
** =Week Code

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current[1] (T_C =25℃)	I_D	8	A
Pulsed Drain Current[2]	I_{DM}	32	A
Single Pulse Avalanche Energy[3]	E_{AS}	408	mJ
Total Power Dissipation(T_C =25℃)	P_D	110	W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	1.13	℃/ W
Storage Temperature Range	T_{STG}	-55~ +150	℃
Operating Junction Temperature Range	T_J	-55~ +150	℃

Electrical characteristics

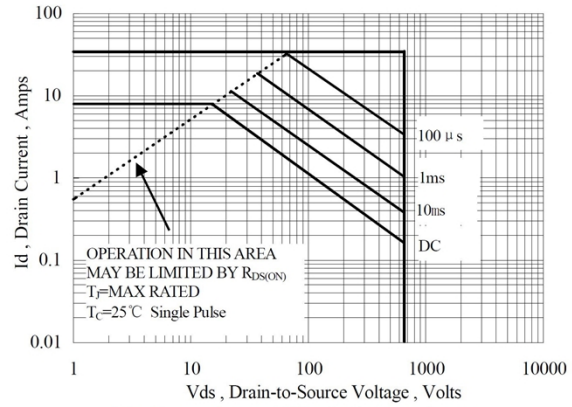
(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D =250μA	650			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =520V,V_{GS} = 0V T_J =25℃			1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±30V, V_{DS} = 0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2	3	4	V
Static Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =4A		0.8	1.1	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz		1233		pF
Output Capacitance	C_{oss}			117		
Reverse Transfer Capacitance	C_{rss}			15		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=325V, V_{GS}=10V, I_D=8A		28		nC
Gate-Source Charge	Q_{gS}			6		
Gate-Drain Charge	Q_{gd}			11		
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=325V, V_{GS}=6V, R_G=9Ω, I_D=8A		13		nS
Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			41		
Fall Time	T_f			21		

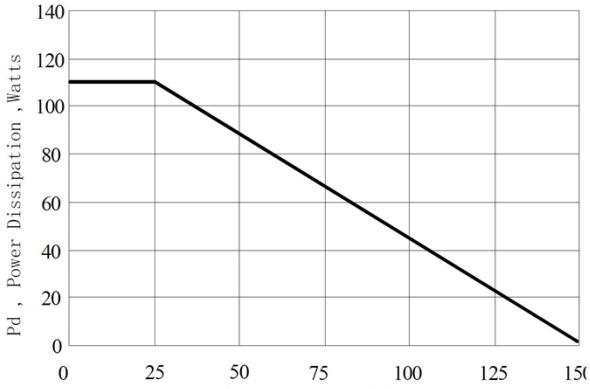
Notes:

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is R G =30Ω ,L=10mH

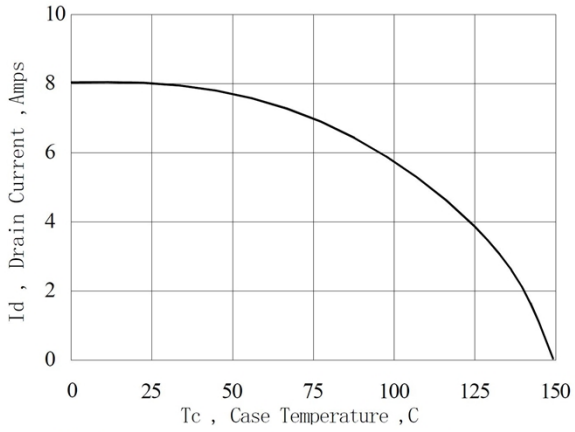
Typical Characteristics



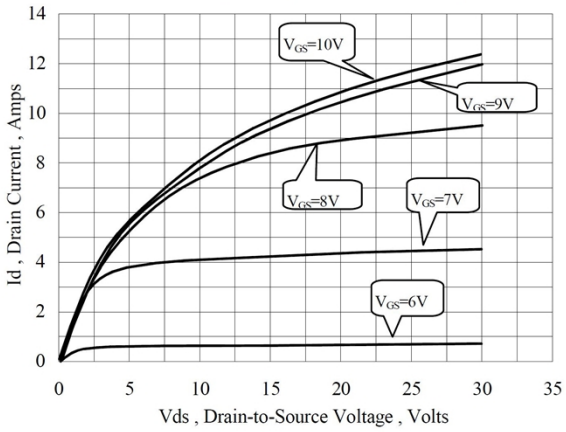
Maximum Forward Bias Safe Operating Area



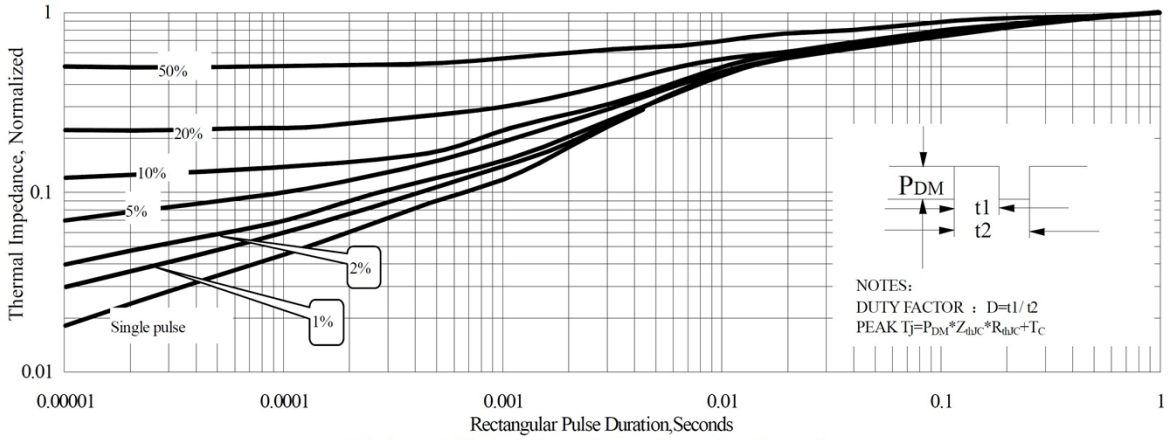
Maximum Power Dissipation vs Case Temperature



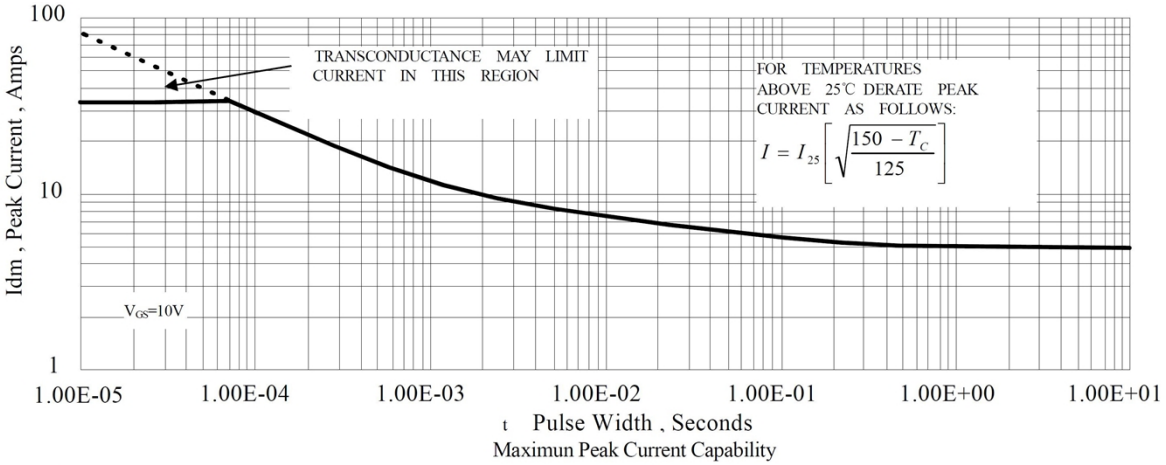
Maximum Continuous Drain Current vs Case Temperature



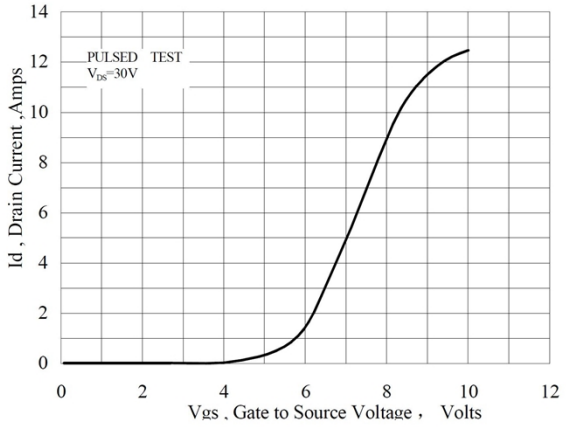
Typical Output Characteristics



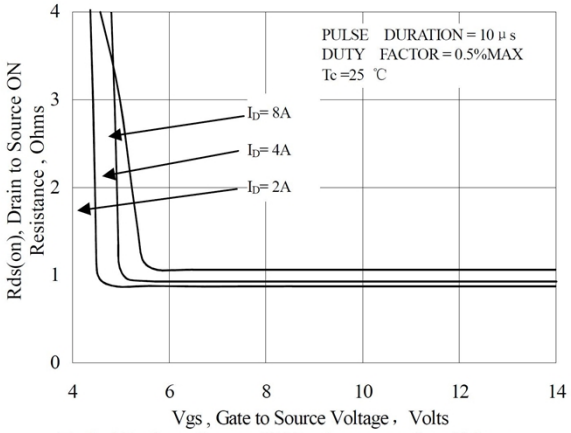
Maximum Effective Thermal Impendance , Junction to Case



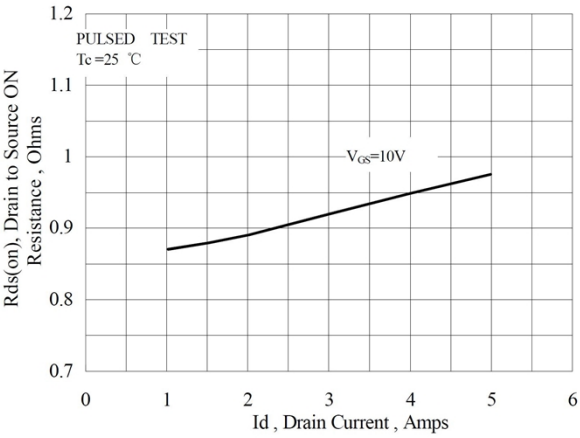
Maximun Peak Current Capability



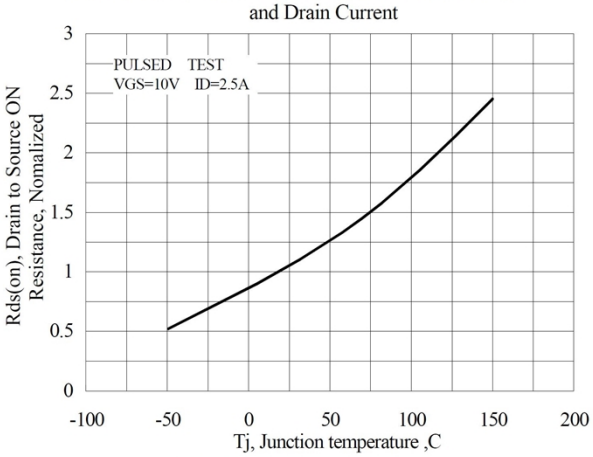
Typical Transfer Characteristics



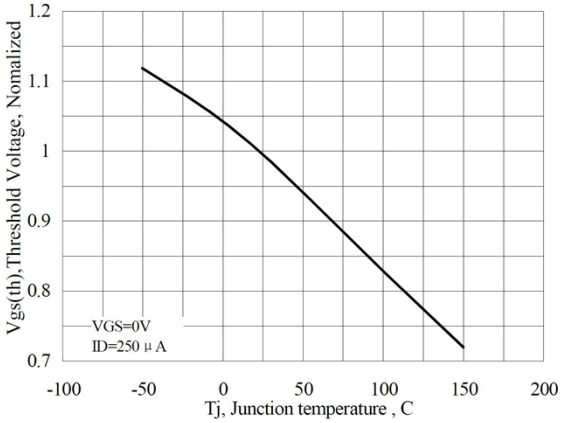
Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current



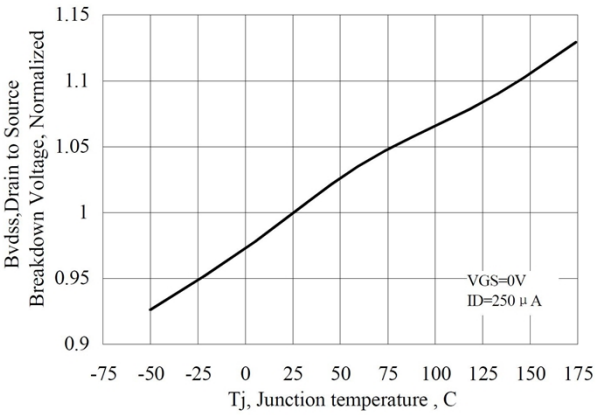
Typical Drain to Source ON Resistance vs Drain Current



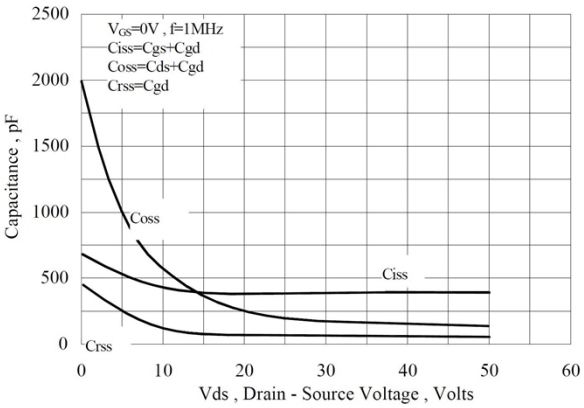
Typical Drian to Source on Resistance vs Junction Temperature



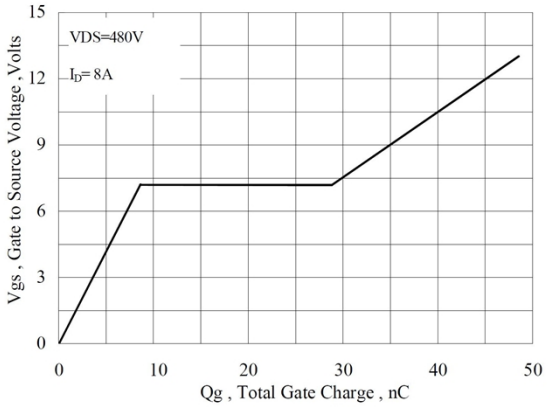
Typical Theshold Voltage vs Junction Temperature



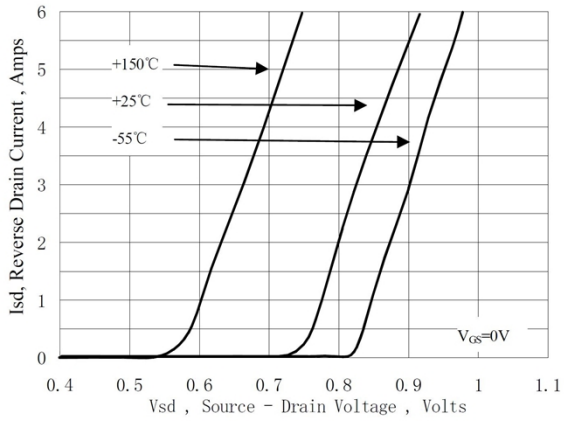
Typical Breakdown Voltage vs Junction Temperature



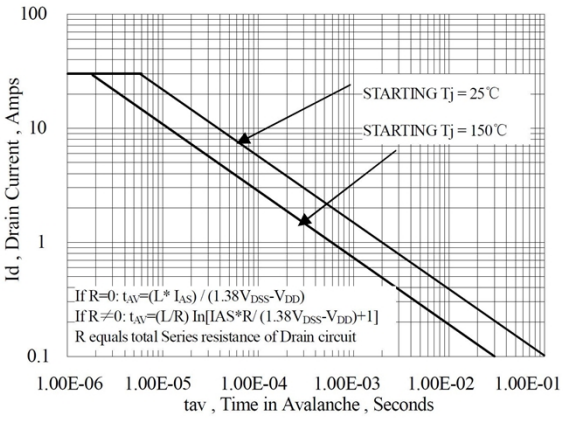
Typical Capacitance vs Drain to Source Voltage



Typical Gate Charge vs Gate to Source Voltage

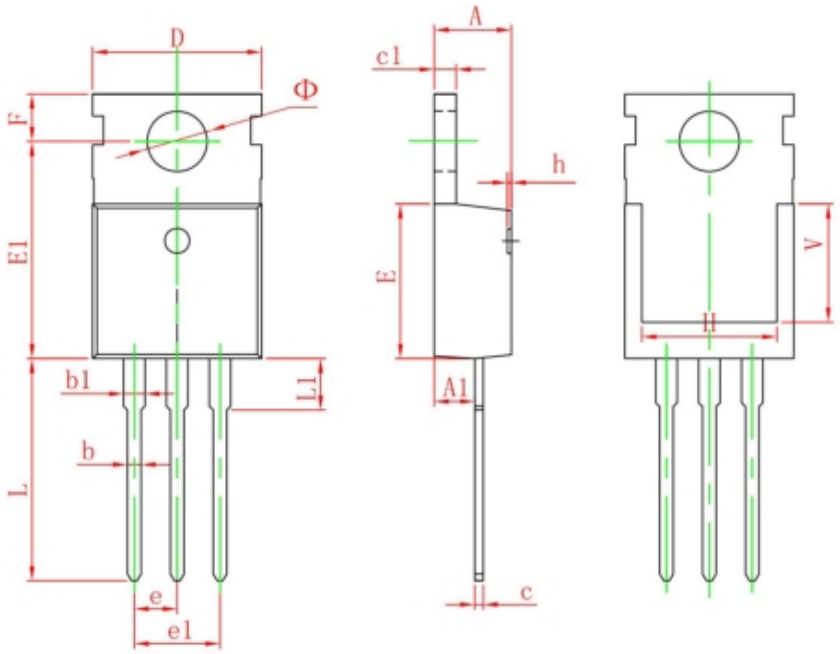


Typical Body Diode Transfer Characteristics



Unclamped Inductive Switching Capability

TO-220-3L-C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150