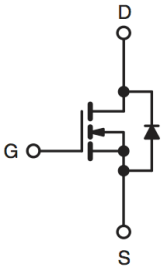
MS10N65SJ 10A 650V
N-Channel Super Junction MOSFET

GENERAL DESCRIPTION

The MS10N65SJ is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, super junction device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications

TO-220

1.Gate 2. Drain 3. Source



FEATURES

- Low RDS(on)
- Ultra Low Gate Charge
- High dv/dt capability
- High Unclamped Inductive Switching (UIS) capability
- High peak current capability
- Increased transconductance performance
- Optimized design for high performance power systems

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)				
Parameter	**Symbol**	**Value**		**Unit**
Continuous drain current	ID	T_c=25°C	9.5	A
Pulsed drain current	$I_{D,\ pulse}$	T_c=25°C	28.5	A
Avalanche energy, single pulse	E_{AS}	I_D=8.3A	340	mJ
Avalanche current, repetitive	I_{AR}	limited by $T_j$max	5	A
MOSFET dv/dt ruggedness	dv/dt	V_{DS}=480V, I_D=9.5A, T_j=125°C	50	V/nS
Gate source voltage	V_{GS}	static	±20	V
		AC (f>1Hz)	±30	V
Power dissipation	P_{tot}	T_c=25°C	95	W
Operating and storage temperature	T_j, T_{stg}		-50 to +150	°C
Operating Junction and Storage Temperature			150	°C

a When mounted on 1inch square 2oz copper clad FR-4

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Characteristics (Tc=25°C, unless otherwise specified)					
Symbol	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static Characteristics					
VGS	VDS = VGS, ID=250μA	2.0	-	4.0	V
*RDS(ON)	VGS =10V,ID =4.75A	-	0.35	0.38	Ω
	VGS=10V, ID=4.75A, Tj=150°C	-	0.63	-	Ω
RG	f=1 MHZ, open drain	-	5	-	Ω
BVDSS	VGS=0, ID=250μA	650	700	-	V
IDSS	VDS =650V,VGS =0V	-	0.1	1	uA
	VDS =650V, VGS =0, Tj=125°C	-	-	100	
IGSSF	VGS =20V,VDS =0V	-	-	100	nA
IGSSR	VGS =-20V,VDS =0V	-	-	-100	nA
Dynamic Characteristics					
Ciss	VGS=0V, VDS=25V, f=1MHz	-	1250	1750	pF
Coss		-	600	840	
Crss		-	5	7	
td(ON)	VDS =300V,ID =9.5A, RG = 25 Ω	-	6	8.5	ns
tr		-	3.5	4.8	
td(OFF)		-	54	76	
tf		-	7	9.8	
Qg	VDS =480V,ID =9.5A, VGS =10V	-	7.1	10	nC
Qgs		-	14.5	-	
Qgd		-	41	-	
Source-Drain Diode Characteristics					
IS		-	-	9.5	A
ISM		-	-	26.5	
VSD	IS = 9.5A, VGS = 0 V	-	-	1.2	V
trr	IS = 9.5 A, VGS = 0 V diF/dt = 100 A/μs	-	322	-	nS
Qrr		-	4.4	-	uC

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- **Characteristic Curves**

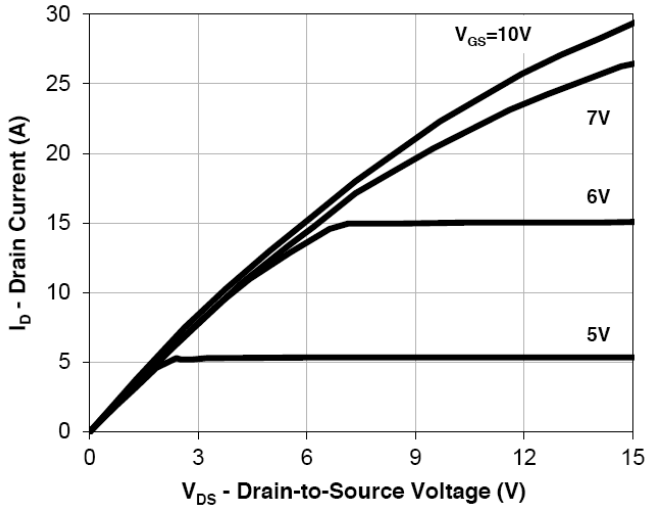

Figure 1. Output Characteristics

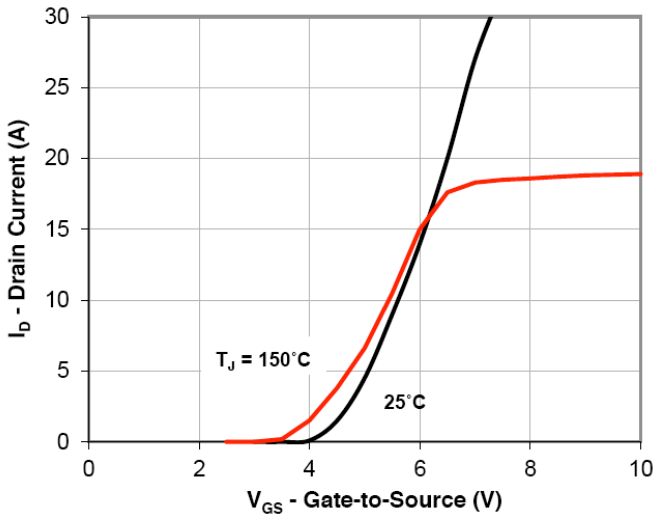

Figure 2. Transfer Characteristics

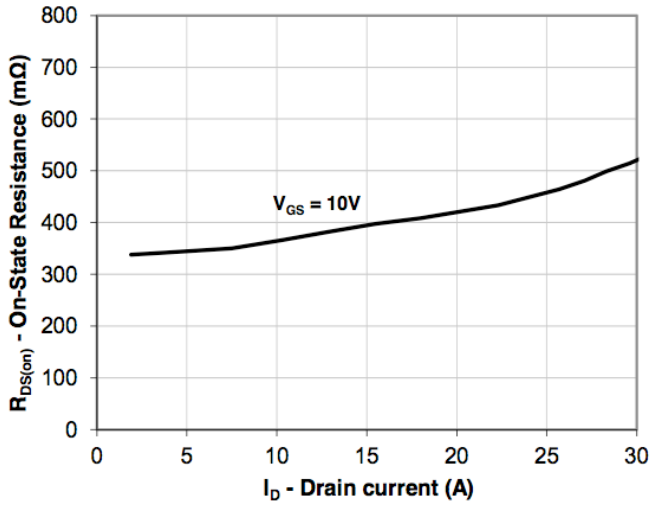

Figure 3. On Resistance vs Drain Current

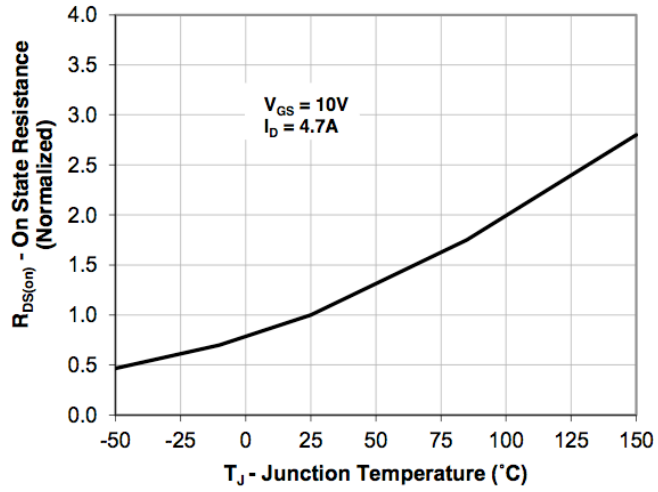

Figure 4. On Resistance vs Junction Temperature

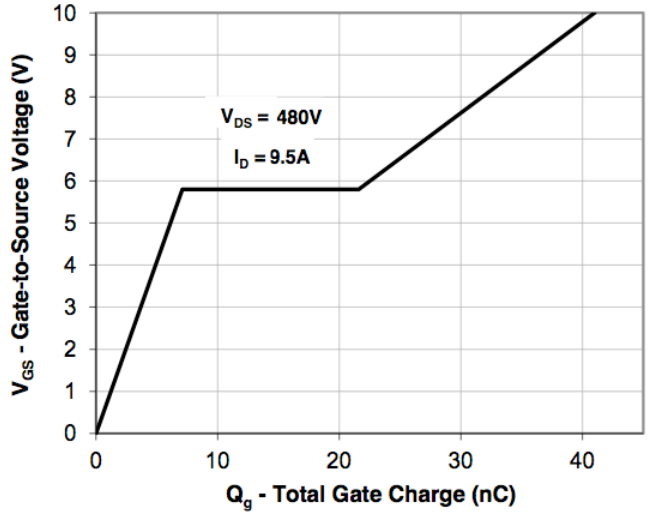

Figure 5. Gate Charge

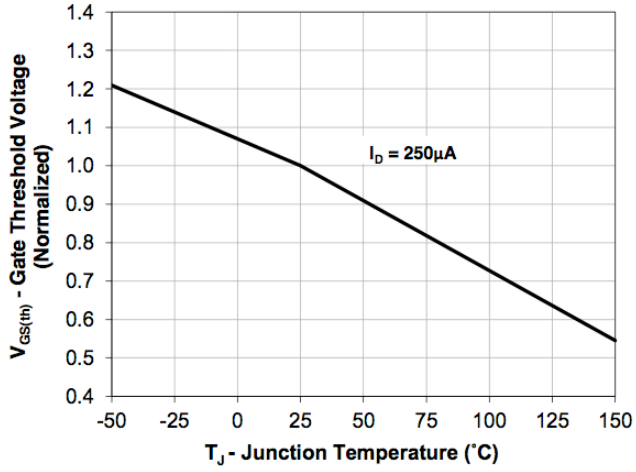

Figure 6. Gate Threshold Voltage vs Junction Temperature

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- **Characteristic Curves**

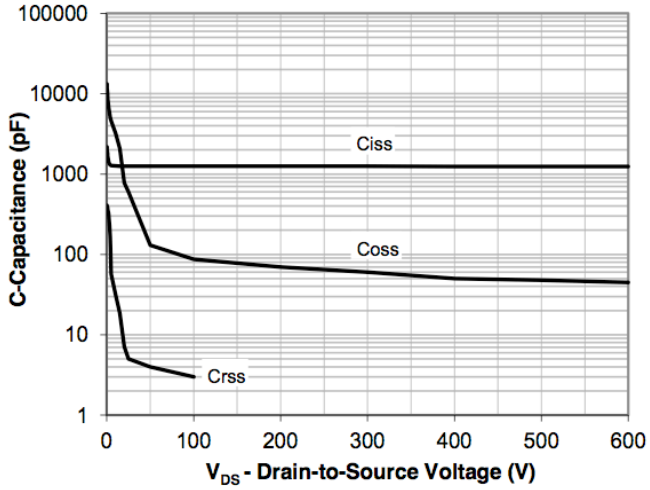

Figure 7. Capacitance

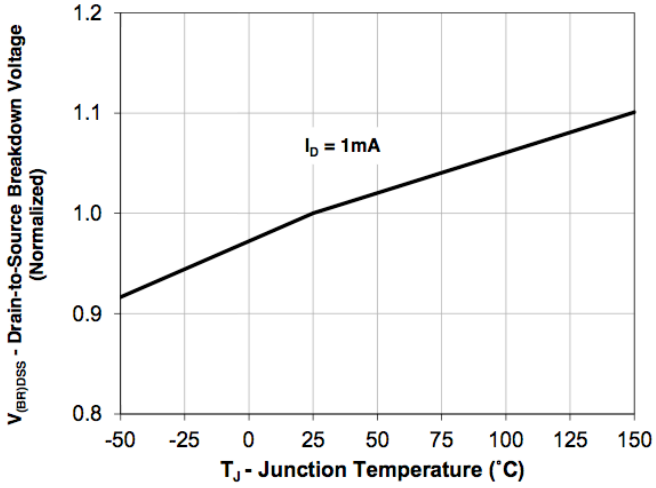

Figure 8. Drain-to-Source Breakdown Voltage vs. Junction Temperature

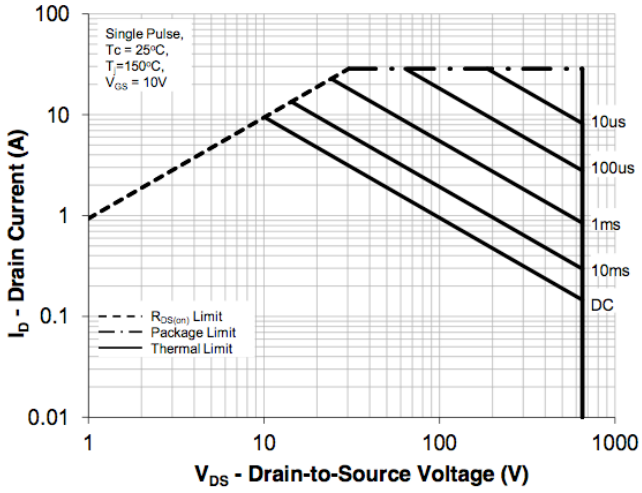

Figure 9. Maximum Safe Operating Area

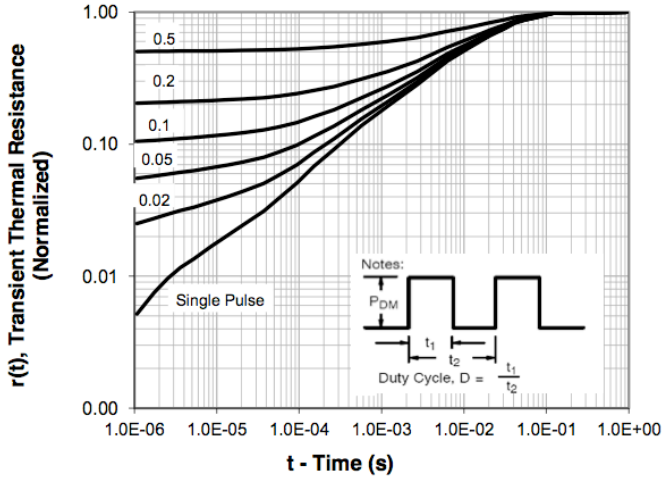

Figure 10. Maximum Drain Current vs. Case Temperature

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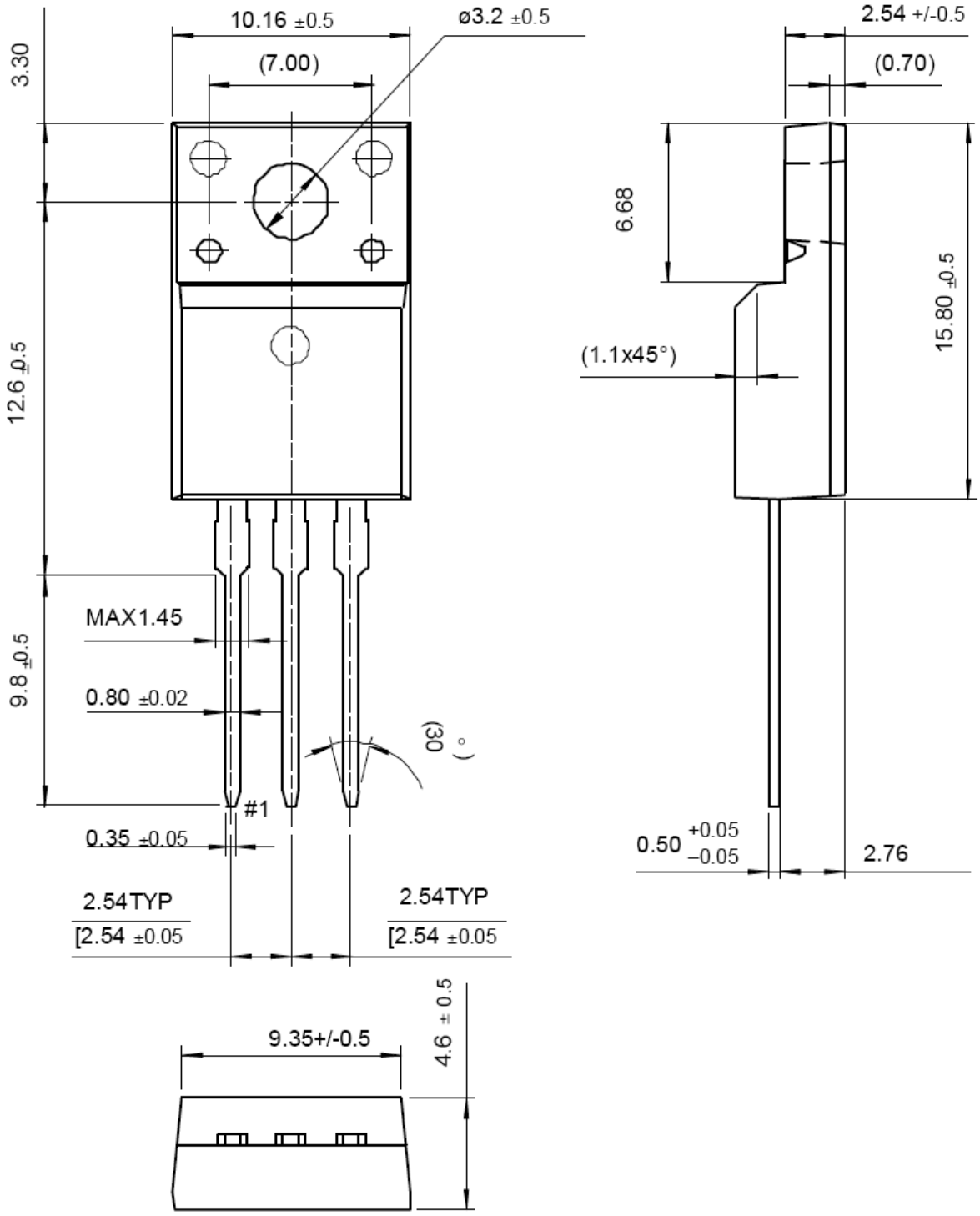
Package Dimensions

Dimensions in Millimeters



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