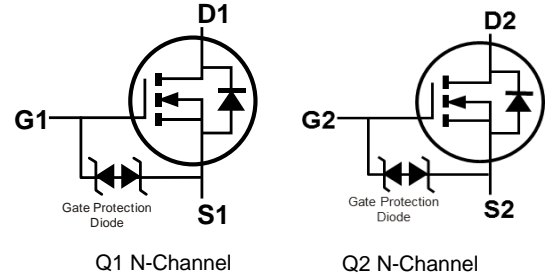




MT3190DW DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} (MAX)	Package	I _D (MAX) T _A = +25°C
30V	300mΩ @ V _{GS} = 10V	SOT363	1A
	335mΩ @ V _{GS} = 4.5V		0.75A



Description

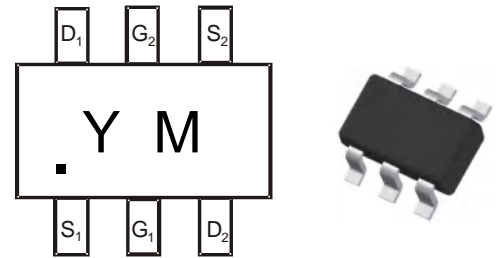
This MOSFET has been designed to minimize the on-state resistance (R_{DS(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1)**
- **Halogen and Antimony Free. "Green" Device (Note 2)**

Applications

- Motor Control
- Power Management Functions
- Load Switch



SOT-363

Marking : YM

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	1000 900	mA
	t < 5s	T _A = +25°C T _A = +70°C	I _D	1300 1000	mA
Maximum Continuous Body Diode Forward Current (Note 5)			I _S	0.5	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			I _{DM}	9.6	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T _A = +25°C	P _D	0.32	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	395	°C/W
Total Power Dissipation (Note 6)	T _A = +25°C	P _D	0.35	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{θJA}	320	°C/W
Thermal Resistance, Junction to Case		R _{θJC}	143	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	—	—	V	V _{GS} = 0V, I _D = 1mA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 24V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±20	μA	V _{GS} = ±10V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.7	—	2.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	222	300	mΩ	V _{GS} = 10V, I _D = 1.3A
		—	281	335		V _{GS} = 4.5V, I _D = 290mA
Diode Forward Voltage	V _{SD}	—	—	1.2	V	V _{GS} = 0V, I _S = 250mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	87	—	pF	V _{DS} = 20V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	17	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	12	—	pF	
Gate Resistance	R _g	—	69.8	—	Ω	f = 1MHz, V _{GS} = 0V, V _{DS} = 0V
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	0.9	—	nC	V _{DS} = 10V, I _D = 250mA
Total Gate Charge (V _{GS} = 10V)	Q _g	—	2.0	—	nC	
Gate-Source Charge	Q _{gs}	—	0.3	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.3	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	4.5	—	ns	V _{DD} = 30V, V _{GS} = 10V, R _G = 10Ω, I _D = 100mA
Turn-On Rise Time	t _R	—	8.9	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	30.3	—	ns	
Turn-Off Fall Time	t _F	—	15.6	—	ns	

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

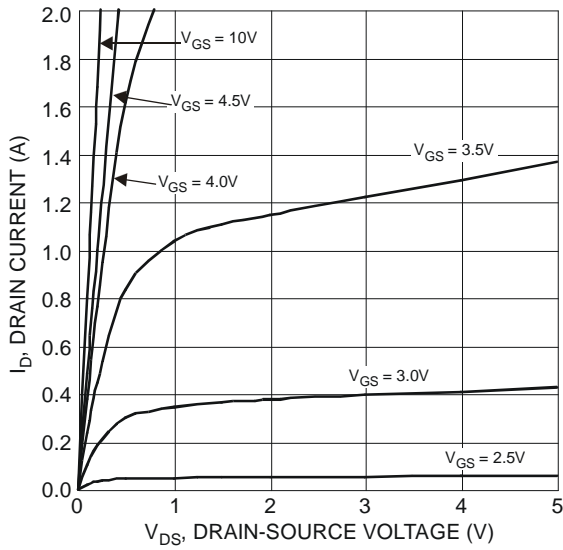


Figure 1 Typical Output Characteristic

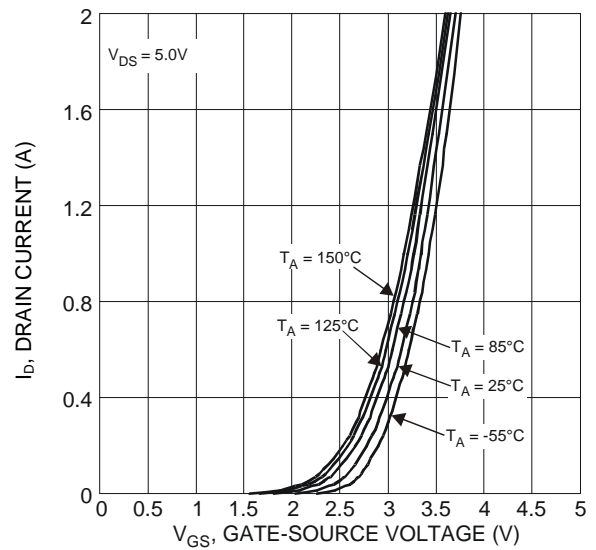


Figure 2 Typical Transfer Characteristics

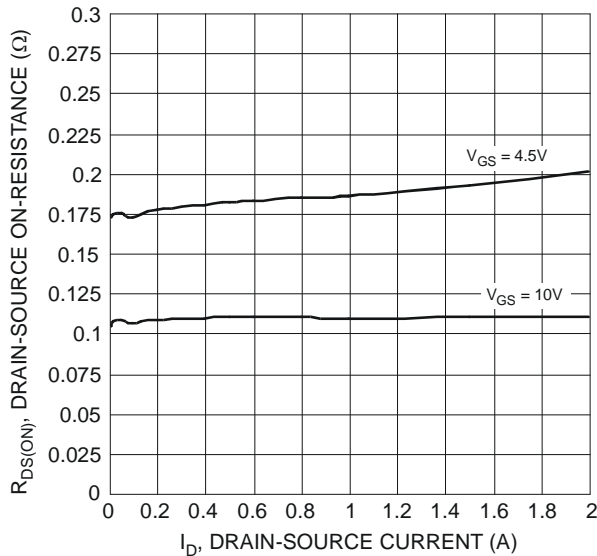


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

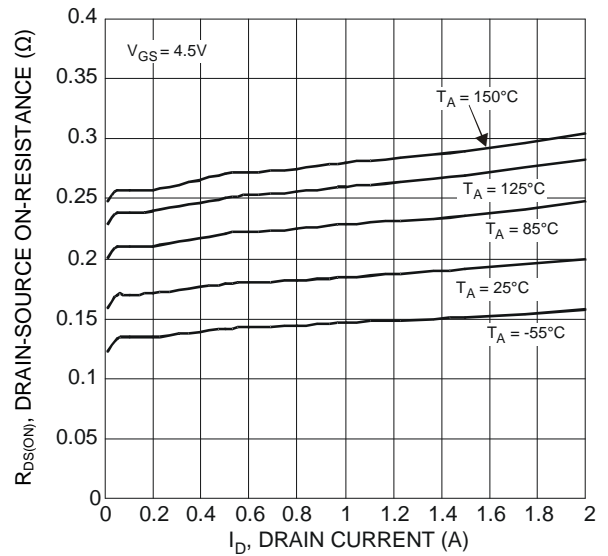


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

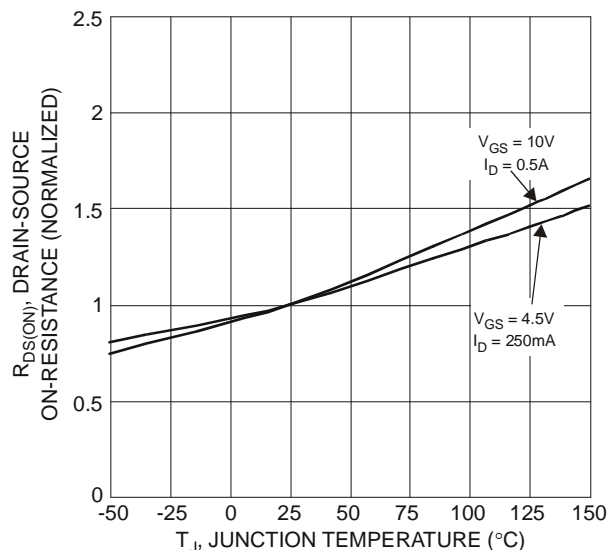


Figure 5 On-Resistance Variation with Temperature

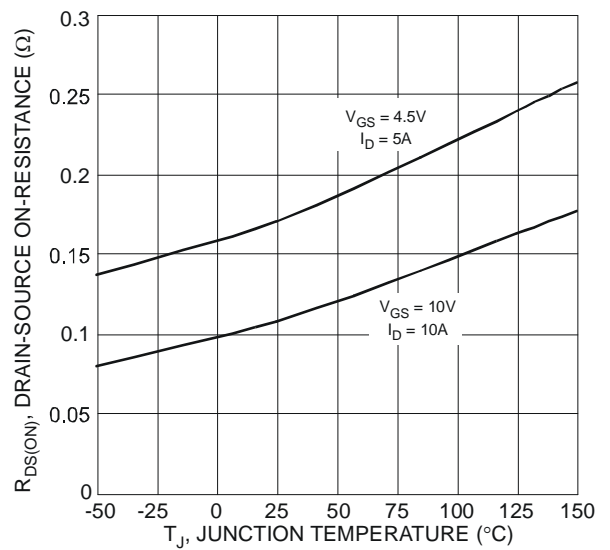


Figure 6 On-Resistance Variation with Temperature

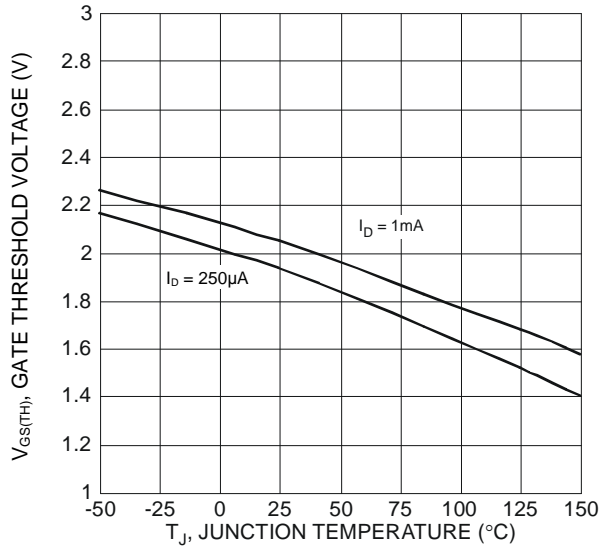


Figure 7 Gate Threshold Variation vs. Junction Temperature

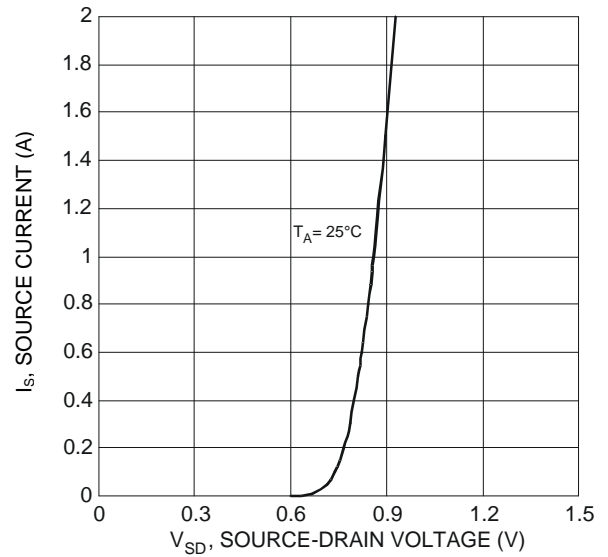


Figure 8 Diode Forward Voltage vs. Current

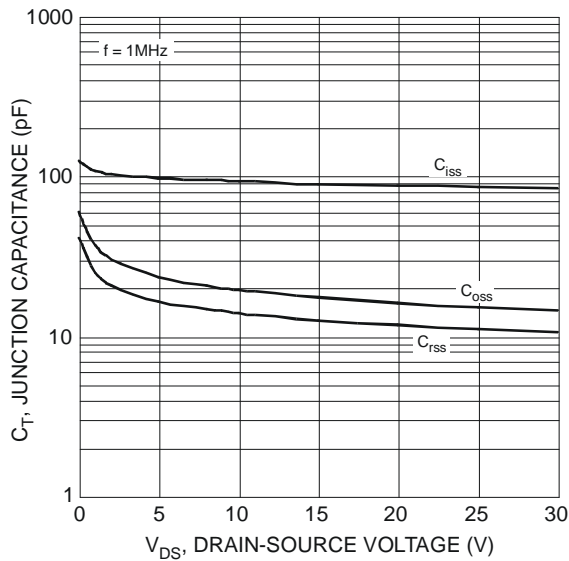


Figure 9 Typical Junction Capacitance

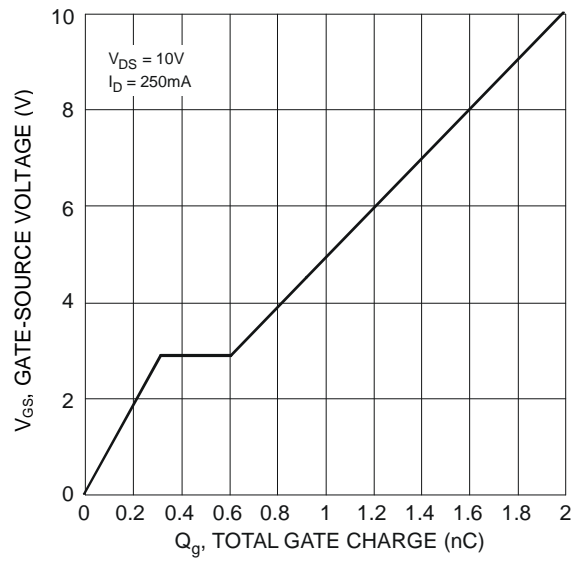


Figure 10 Gate Charge

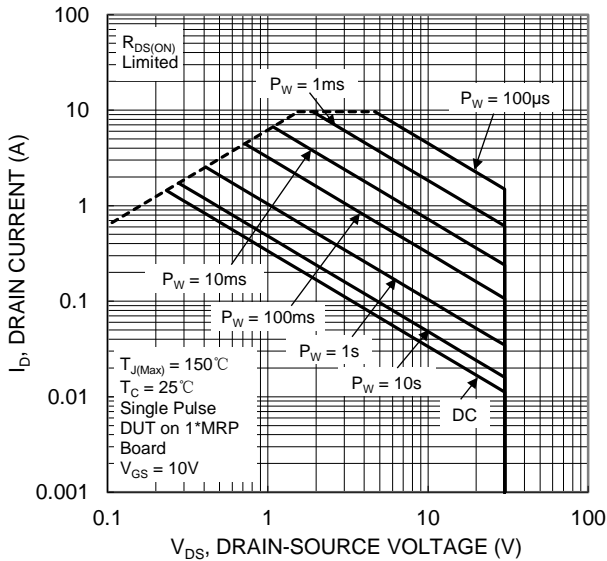
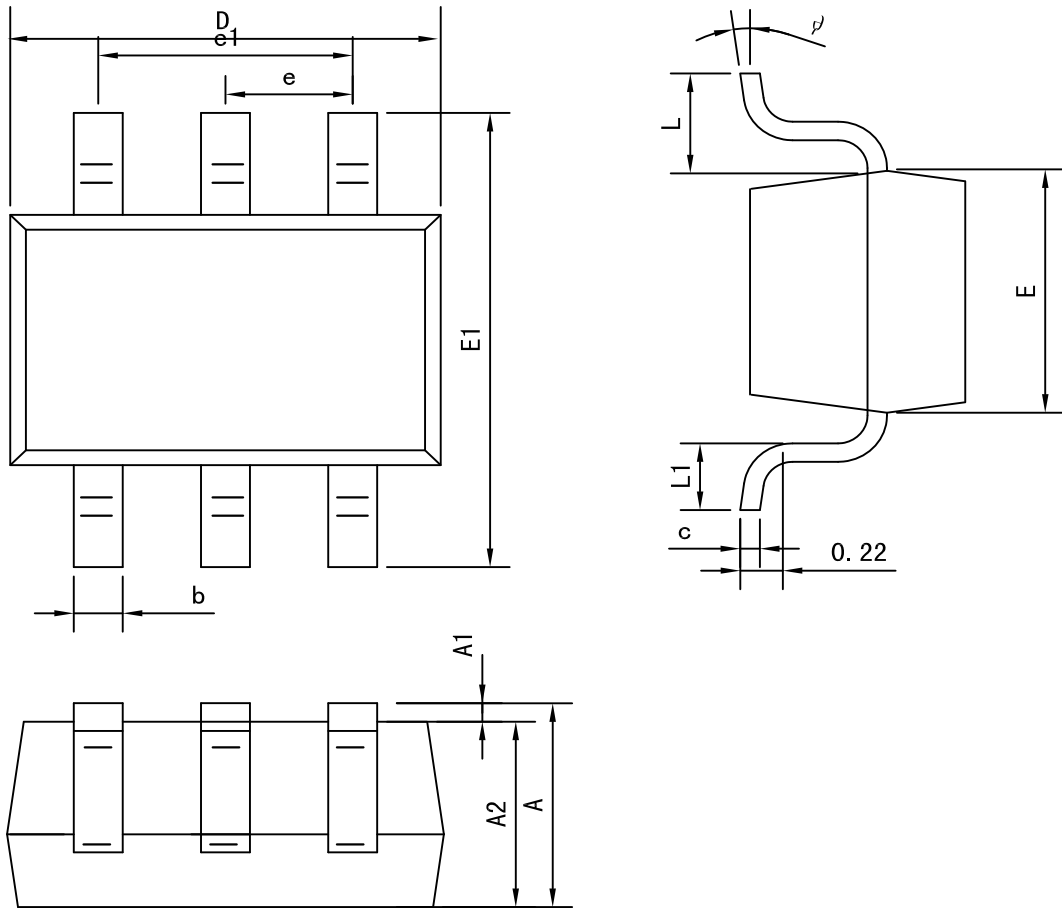


Figure 11 SOA, Safe Operation Area



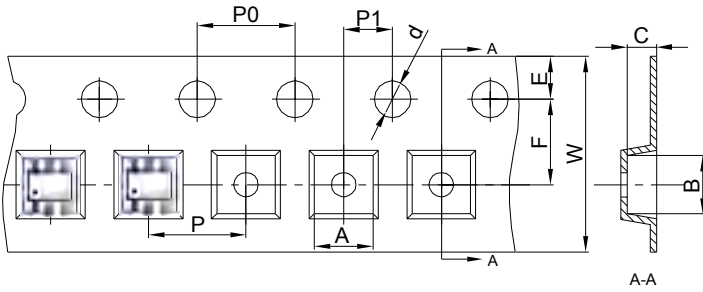
SOT-363 Package outline dimensions



Symbol	Dimension in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
A2	0.900	1.000
b	0.150	0.350
c	0.080	0.150
D	2.000	2.200
E	1.150	1.350
E1	2.150	2.450
e	0.650 TYP	
e1	1.200	1.400
L	0.525 REF	
L1	0.260	0.460
θ	0°	8°



SOT-363 Embossed Carrier Tape



Packaging Description:

SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-363	2.25	2.55	1.20	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-363 Tape Leader and Trailer

