

600V N-Channel Power MOSFET

Features

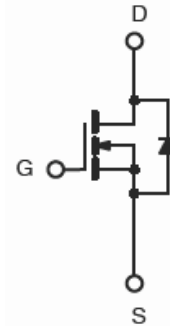
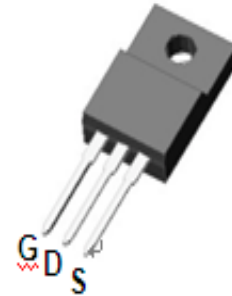
- High Voltage: $BV_{DSS}=600V(\text{Min.})$
- $I_D : 26 \text{ A}$
- Reliable and Rugged
- Avalanche Rated
- Lead Free and Green Devices Available
- 100% UIS + Rg Tested

Application

- AC/DC Power Conversion in Switched Mode Power Supplies(SMPS)
- Uninterruptible Power Supply (UPS)
- Adapter

Ordering Information

Type NO	Marking	Package Code
WSM1260F	M1260F	TO-220F



Absolute maximum ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	V_{DSS}	600	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current (DC) *	I_D	($T_C=25^\circ\text{C}$)	26 ^a	A
		($T_C=100^\circ\text{C}$)	16.5	A
Drain current (Pulsed) *	I_{DM}	80 ^b	A	
Power dissipation	P_D	41.7	W	
MOSFET dv/dt ruggedness	dv/dt	50 ^c	V/ns	
Single pulsed avalanche energy	E_{AS}	490 ^d	mJ	
Avalanche current	I_{AR}	3.5 ^e	A	
Repetitive avalanche energy	E_{AR}	1.16 ^e	mJ	
Junction temperature	T_J	150	°C	
Storage temperature range	T_{stg}	-55~150		

Note a: Limited by maximum junction temperature.

Note b: Bond wire current limit.

Note c: $V_{DS}=480V$, $I_D=26A$

Note d: $I_D=3.5A$, $V_{DD}=50V$, $T_J=25^\circ\text{C}$

Note e: Repetitive Rating : Pulse width limited by maximum junction temperature.

Characteristic	Symbol	Rating	Unit	
Thermal resistance	Junction-case	$R_{th(J-C)}$	3	°C/W
	Junction-ambient	$R_{th(J-A)}$	62.5	

Electrical Characteristics (T_C=25°C unless otherwise noted)

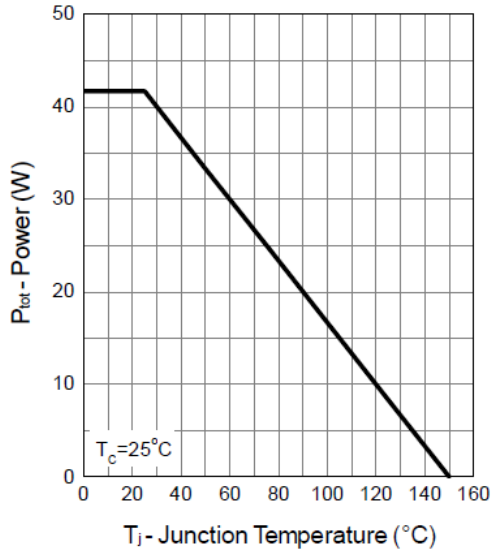
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV _{DSS}	I _D =250uA, V _{GS} =0	600	-	-	V
Gate threshold voltage	V _{GS(th)}	I _D =250uA, V _{DS} =V _{GS}	2.5	3.5	4.5	V
Drain-source cut-off current	I _{DSS}	V _{DS} =480V, V _{GS} =0V	-	-	1	uA
Gate leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V	-	-	±100	nA
Drain-source on-resistance	R _{DS(ON)}	V _{GS} =10V, I _{DS} =13A	f	0.103	0.123	Ω
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz	-	2490	3240	pF
Output capacitance	C _{oss}		-	2200	-	
Reverse transfer capacitance	C _{rss}		g	-	9	
Turn-on delay time	t _{d(on)}	V _{DD} =400V, V _{GEN} =10V, R _L =15.4 Ω I _{DS} =26A, R _G =6Ω	-	22	-	ns
Rise time	t _r		-	7	-	
Turn-off delay time	t _{d(off)}		-	53	-	
Fall time	t _f		-	4.4	-	
Total gate charge	Q _g	V _{DS} =480V, V _{GS} =10V I _{DS} =13A	-	64	83	nC
Gate-source charge	Q _{gs}		-	19	-	
Gate-drain charge	Q _{gd}		-	31	-	
Forward voltage	V _{SD}	V _{GS} =0V, I _S =26A	f	0.97	1.3	V
Reverse recovery time	t _{rr}	I _S =26A, V _R =360V dI _{SD} /dt=100A/us	-	264	-	ns
Reverse recovery charge	Q _{rr}		-	3.4	-	uC
Peak Reverse Recovery Current	I _{rm}		-	25	-	A

Note f: Pulse test ; pulse width ≤ 300us, duty cycle ≤ 2%.

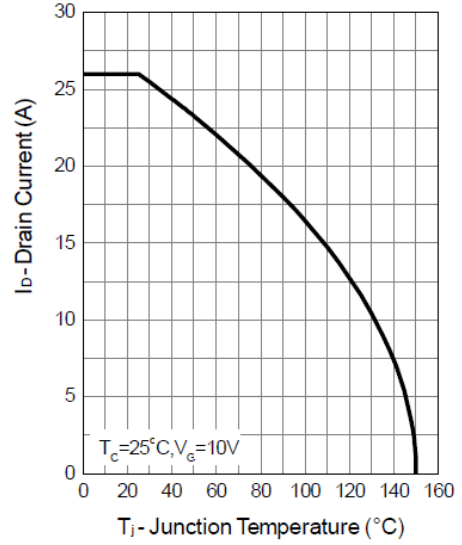
Note g: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

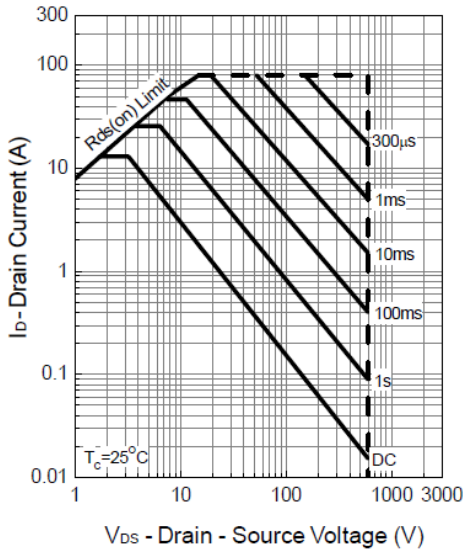
Power Dissipation



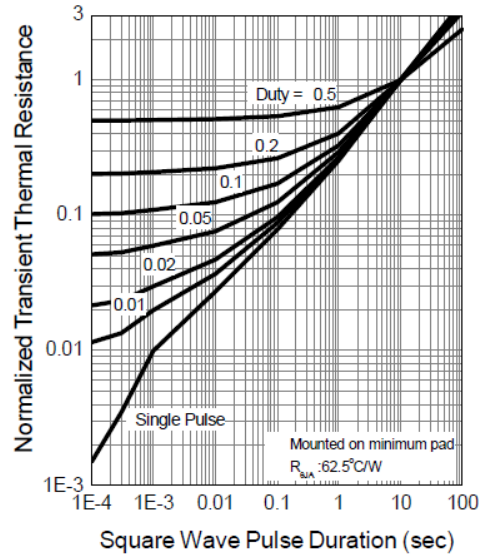
Drain Current



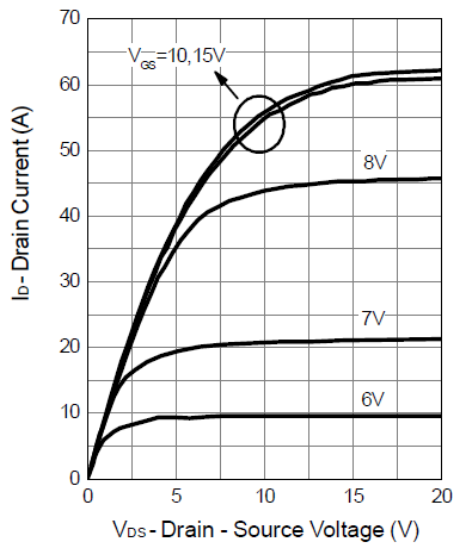
Safe Operation Area



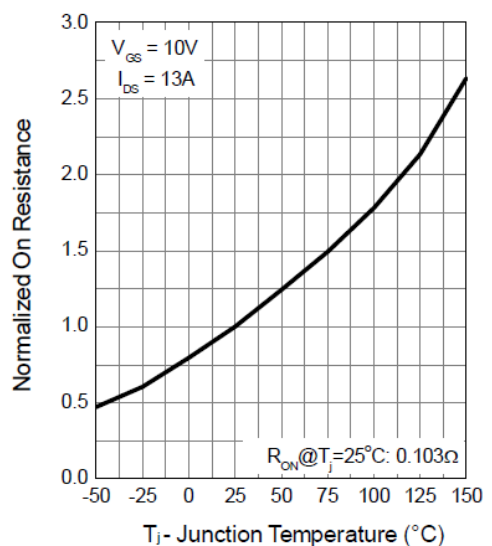
Thermal Transient Impedance



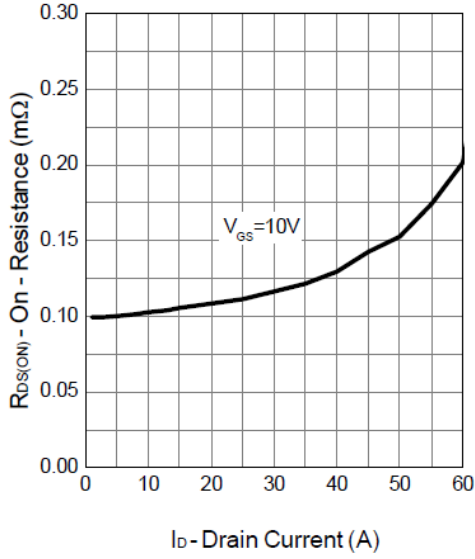
Output Characteristics



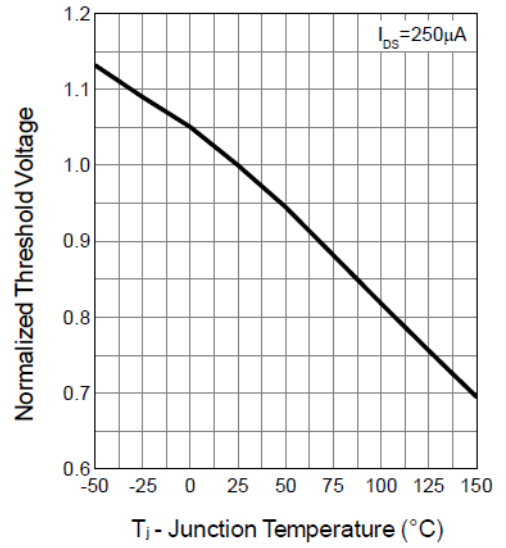
Drain-Source On Resistance



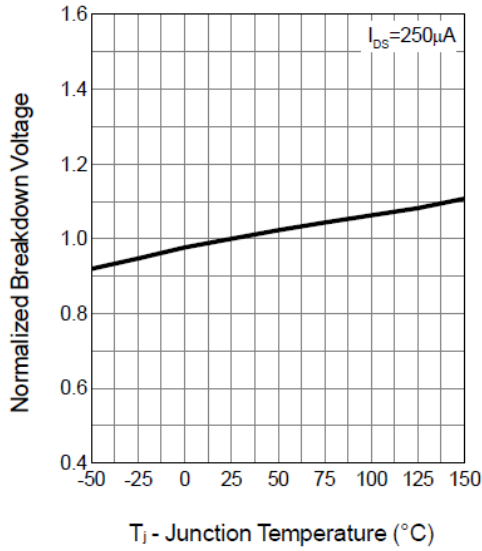
Drain-Source On Resistance



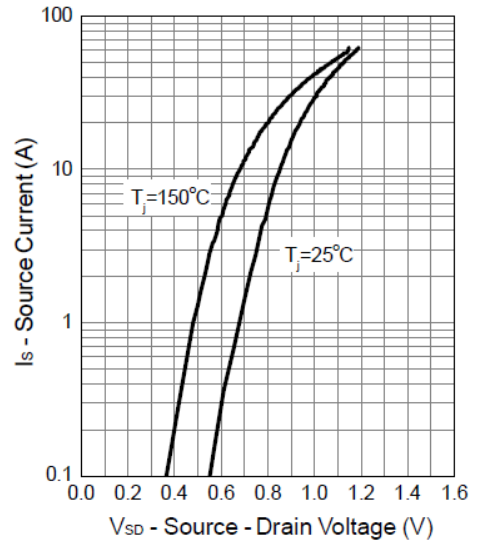
Gate Threshold Voltage



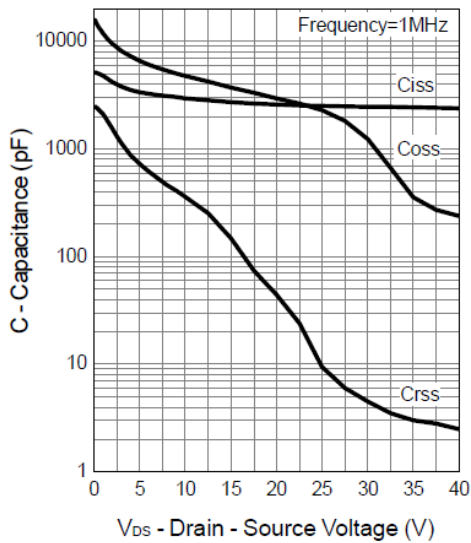
BVDSS vs Junction Temperature



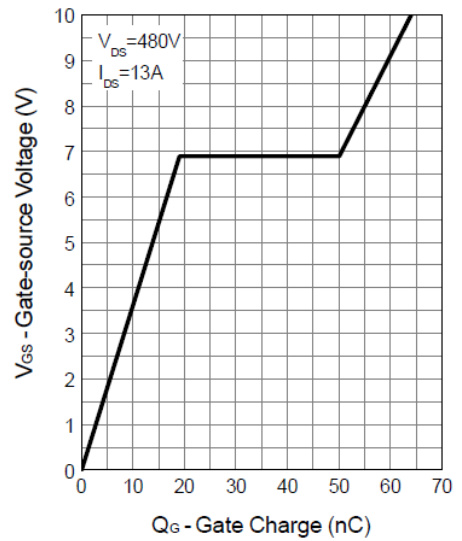
Source-Drain Diode Forward



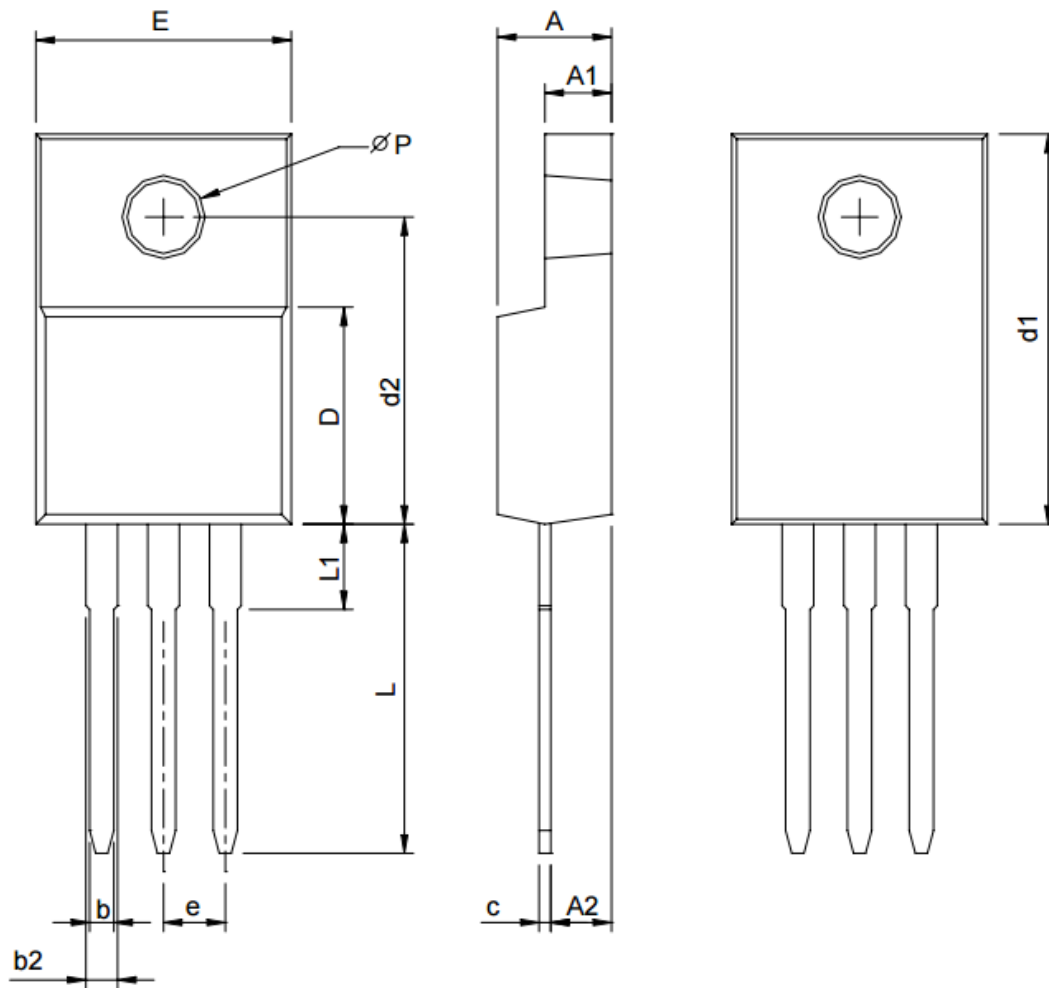
Capacitance



Gate Charge

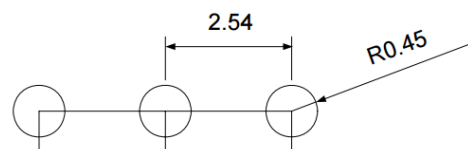


Outline Dimension unit: mm



SYMBOL	TO-220FP			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	4.20	4.80	0.165	0.189
A1	2.34	3.20	0.092	0.126
A2	2.10	2.90	0.083	0.114
b	0.50	0.90	0.020	0.035
b2	0.91	1.90	0.035	0.075
c	0.30	0.80	0.012	0.031
D	8.10	9.40	0.319	0.370
d1	14.50	16.50	0.571	0.650
d2	12.10	12.90	0.476	0.508
E	9.70	10.70	0.382	0.421
e	2.54 BSC		0.100 BSC	
L	13.00	14.50	0.512	0.570
L1	1.60	4.00	0.063	0.157
P	3.00	3.60	0.118	0.142

RECOMMENDED LAND PATTERN



UNIT: mm

WSM1260F



First Line	WTC	Company Name	
Second Line	M1260F	Product Code	
Third Line	HE0MFI	1st (Year Code)	A-2010 B-2011 C-2012 ...
		2nd(Month Code)	A-Jan B-Feb C-Mar D-Apr E-May F-Jun G-Jul H-Aug I-Sep J-Oct K-Nov L-Dec
		3rd (Lot Code)	0-1 , A-9
		4th(Product Code)	M-MOS , T-Transistor
		5th (Package Code)	B-TO-263 , X-TO-220 , F-TO220F
		6th (Spec Code)	(Reserve)