

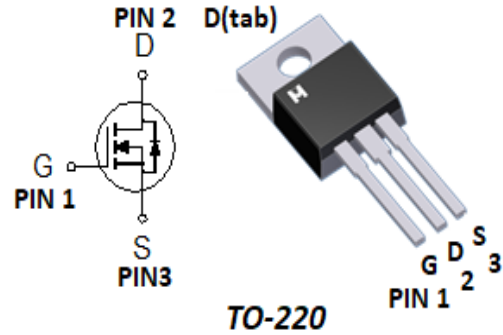
N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	150V
$R_{DS(on) (MAX.)}$	50m Ω
I_D	48A

UIS, Rg 100% Tested

RoHS & Halogen Free & TSCA Compliant



ABSOLUTE MAXIMUM RATINGS ($T_c = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNIT
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GS}	± 30	V
Continuous Drain Current	$T_c = 25\text{ }^\circ\text{C}$	I_D	48	A
	$T_c = 100\text{ }^\circ\text{C}$		30	
Pulsed Drain Current ¹		I_{DM}	140	
Avalanche Current		I_{AS}	18	
Avalanche Energy	$L = 0.2\text{mH}, I_D = 18\text{A}, R_G = 25\text{ }\Omega$	E_{AS}	32.4	mJ
Repetitive Avalanche Energy ²	$L = 0.1\text{mH}$	E_{AR}	16.2	
Power Dissipation	$T_c = 25\text{ }^\circ\text{C}$	P_D	104	W
	$T_c = 100\text{ }^\circ\text{C}$		41	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNIT
Junction-to-Case	$R_{\theta JC}$		1.2	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$



ELECTRICAL CHARACTERISTICS (T_c = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	150			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.5	2.5	4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 120V, V _{GS} = 0V			1	μA
		V _{DS} = 100V, V _{GS} = 0V, T _J = 125 °C			25	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	48			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A		40	50	mΩ
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 20A		40		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1MHz		4905		pF
Output Capacitance	C _{oss}			238		
Reverse Transfer Capacitance	C _{rss}			200		
Gate Resistance	R _g	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz		2.0		Ω
Total Gate Charge ^{1,2}	Q _g	V _{DS} = 80V, V _{GS} = 10V, I _D = 20A		67.5		nC
Gate-Source Charge ^{1,2}	Q _{gs}			12.7		
Gate-Drain Charge ^{1,2}	Q _{gd}			16.6		
Turn-On Delay Time ^{1,2}	t _{d(on)}	V _{DS} = 75V, I _D = 1A, V _{GS} = 10V, R _{GS} = 6Ω		20		nS
Rise Time ^{1,2}	t _r			18		
Turn-Off Delay Time ^{1,2}	t _{d(off)}			40		
Fall Time ^{1,2}	t _f			18		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_c = 25 °C)						
Continuous Current	I _S				48	A
Pulsed Current ³	I _{SM}				140	
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0V			1.3	V
Reverse Recovery Time	t _{rr}	I _F = 25A, dI _F /dt = 100A / μS		120		nS
Reverse Recovery Charge	Q _{rr}			380		nC

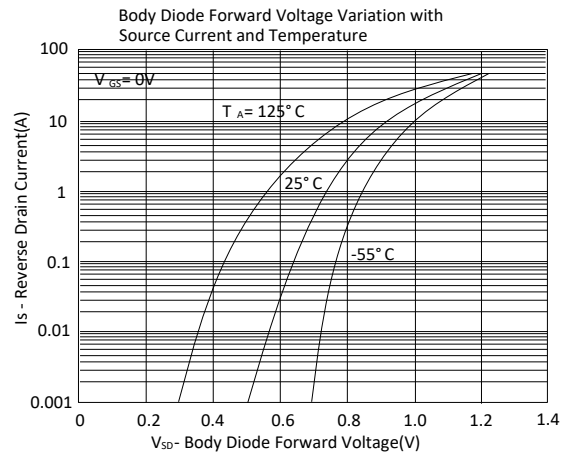
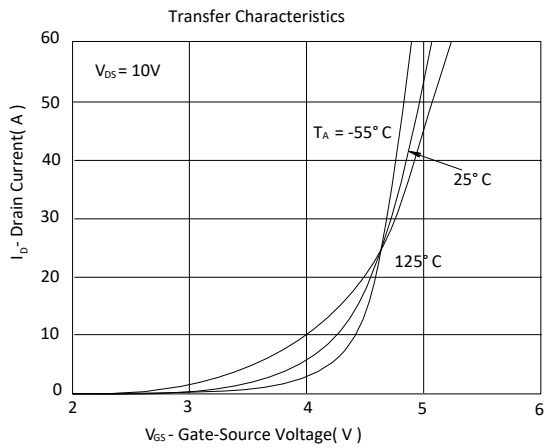
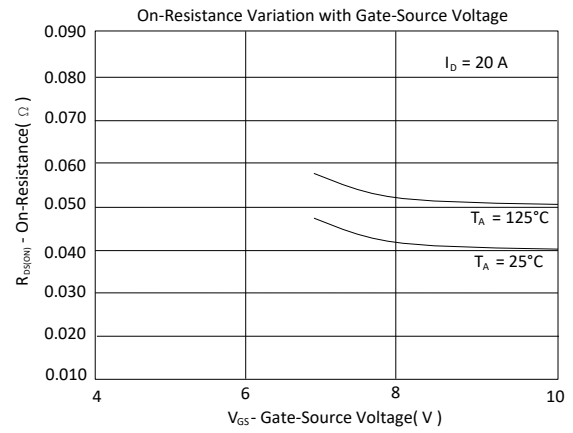
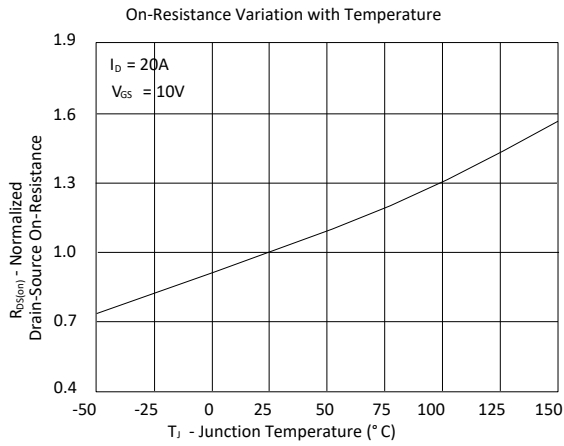
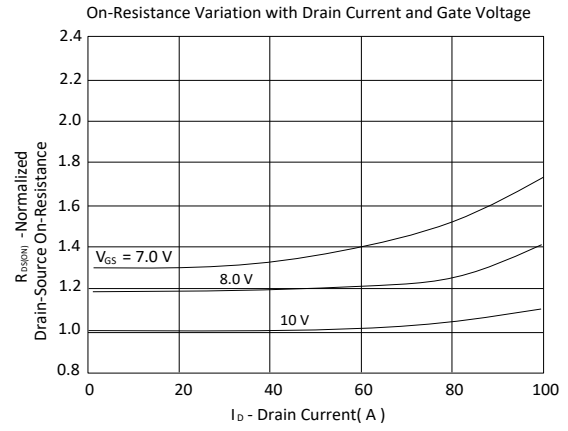
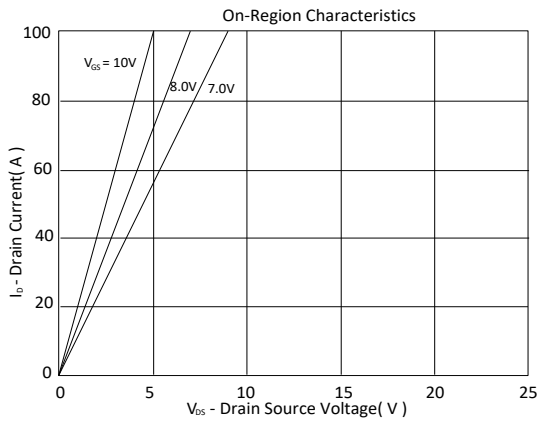
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

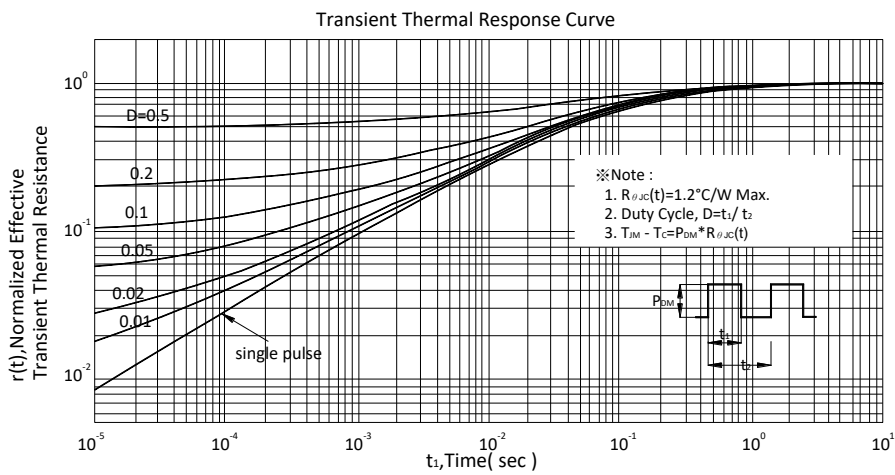
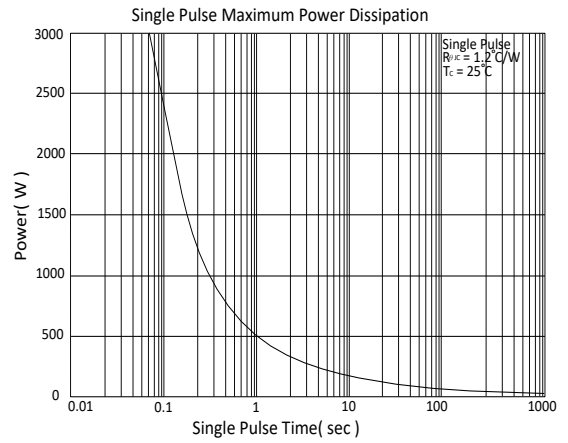
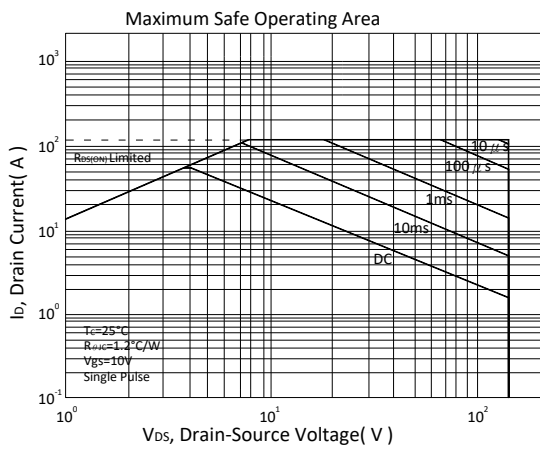
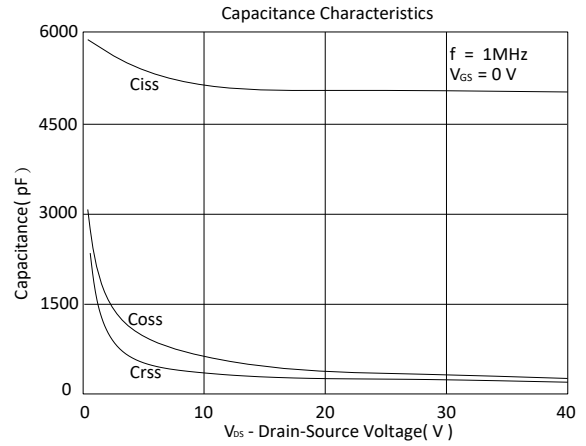
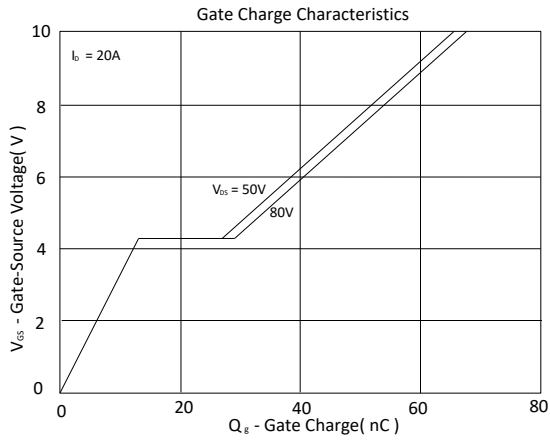
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.



TYPICAL CHARACTERISTICS

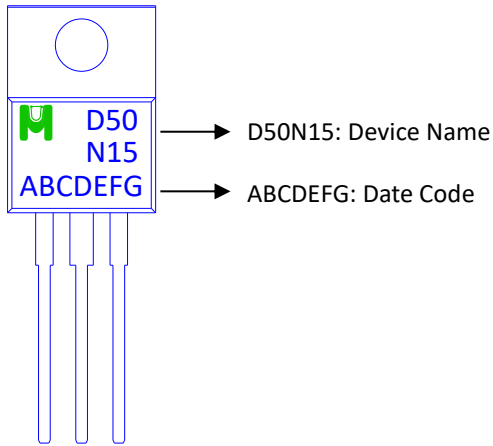




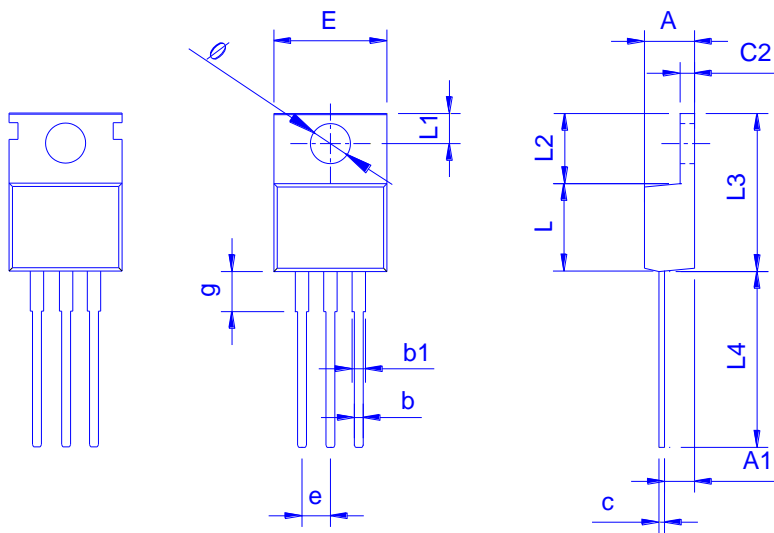


Ordering & Marking Information:

Device Name: EMD50N15E for TO-220



Outline Drawing



Dimension in mm

Dimension	A	A1	b	b1	c	c2	E	L	L1	L2	L3	L4	∅	e	g
Min.	4.240	2.250	0.700	1.170	0.310	1.150	9.910	8.500	2.590	6.100	14.700	12.700	3.400	2.440	2.850
Typ.	4.440	2.400	0.800	1.550	0.500	1.270	10.160	8.920	2.800	6.300	15.370	13.720	3.840	2.540	3.800
Max.	4.700	2.820	0.910	1.750	0.650	1.400	10.360	9.750	3.250	6.800	16.900	13.970	3.935	2.640	4.000



◆ Tube Information: 50pcs/Tube (1000pcs/Box)

