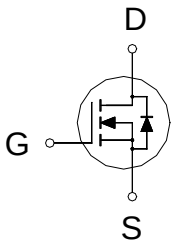
杰力科技股份有限公司
Excelliance MOS Corporation

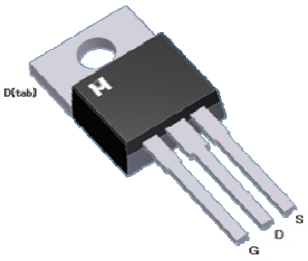
EMD50N15E

N-Channel Logic Level Enhancement Mode Field Effect Transistor

Product Summary:

BV_{DSS}	150V
$R_{DSON\ (MAX.)}$	50mΩ
I_D	48A





UIS, Rg 100% Tested

Pb-Free Lead Plating & Halogen Free

GP
GREEN PRODUCT

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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 °C	I_D	48	A
	T_C = 100 °C		30	
Pulsed Drain Current[1]		I_{DM}	140	
Avalanche Current		I_{AS}	18	
Avalanche Energy	L = 0.2mH, I_{AS}=18A, RG=25Ω	E_{AS}	32.4	mJ
Repetitive Avalanche Energy[2]	L = 0.1mH	E_{AR}	16.2	
Power Dissipation	T_C = 25 °C	P_D	104	W
	T_C = 100 °C		41	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

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

[1]Pulse width limited by maximum junction temperature.

[2]Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_J = 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

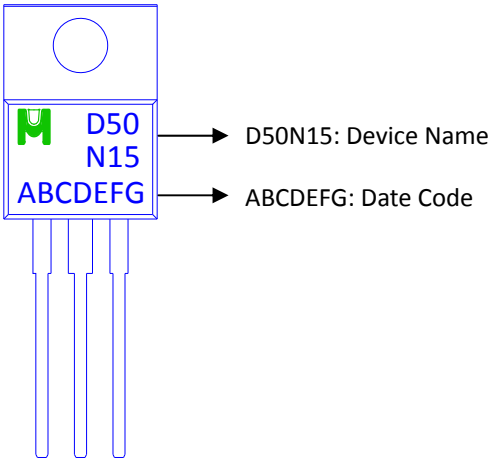
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

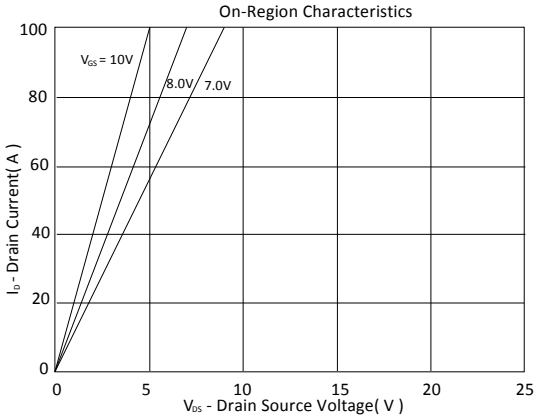
[3]Pulse width limited by maximum junction temperature.

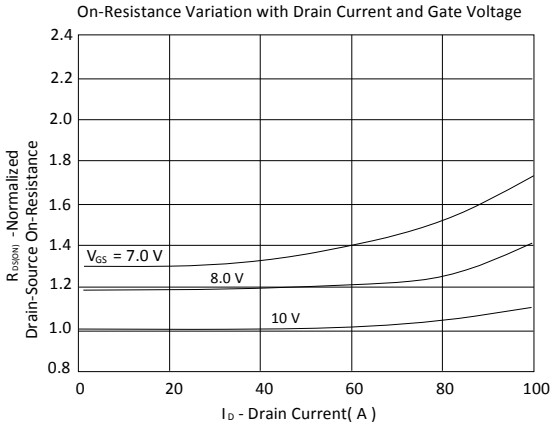
Ordering & Marking Information:

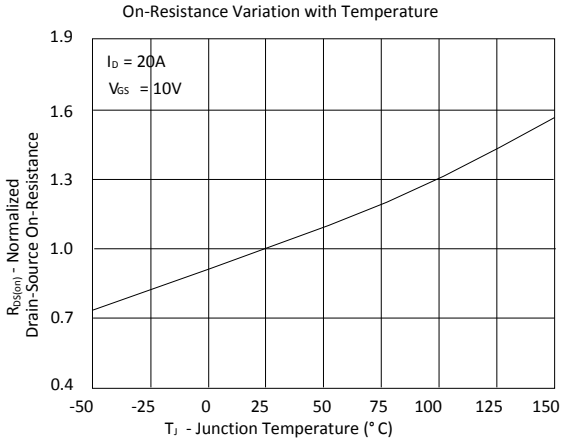
Device Name: EMD50N15E for TO-220

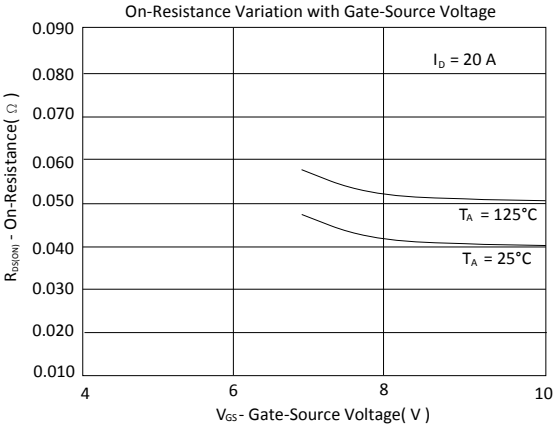


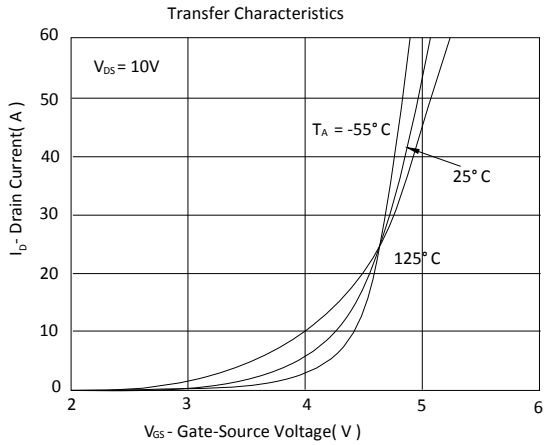
TYPICAL CHARACTERISTICS

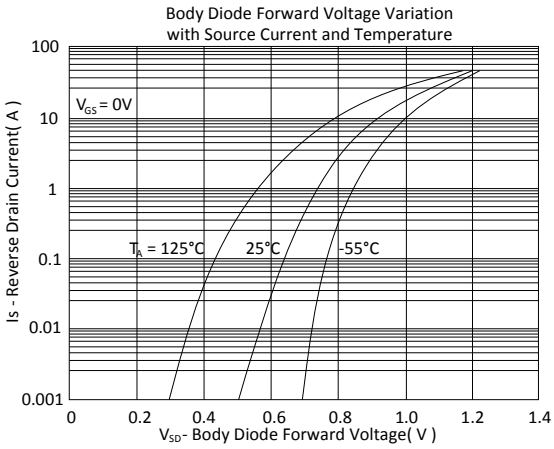




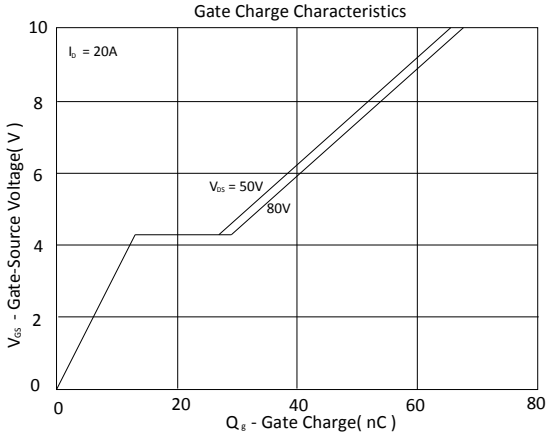




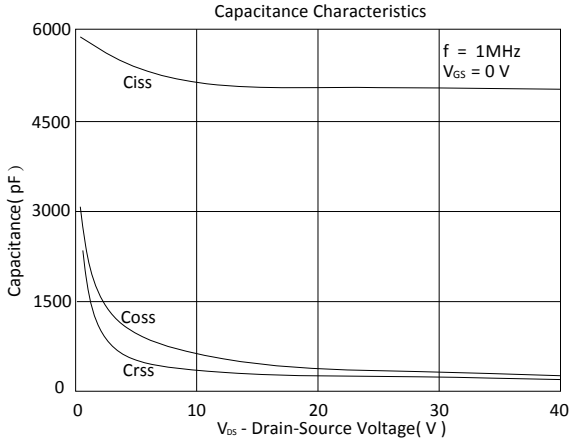




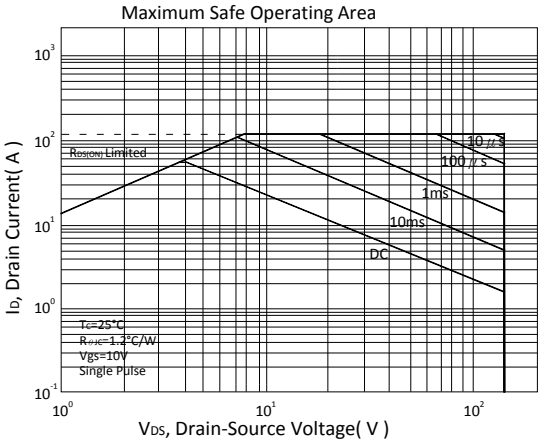
Gate Charge Characteristics



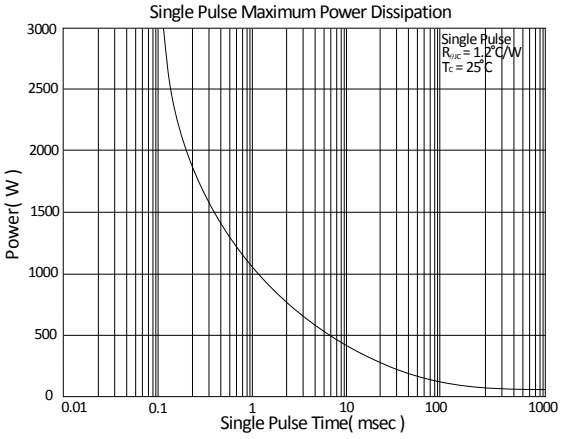
Capacitance Characteristics



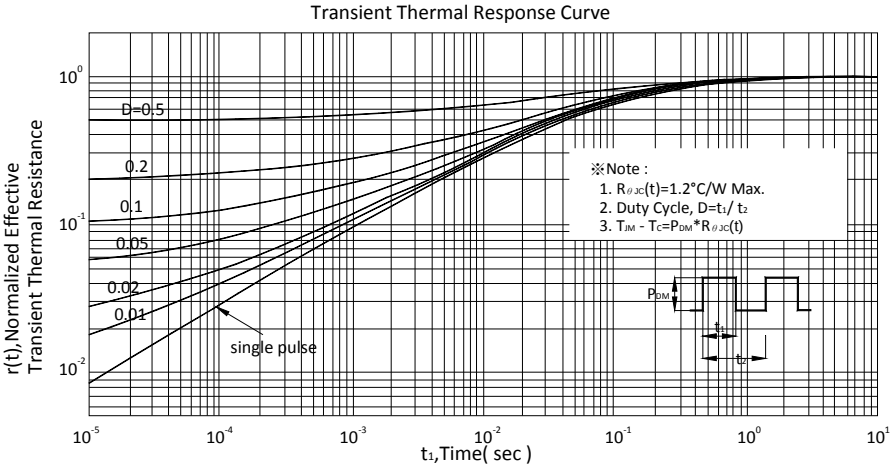
Maximum Safe Operating Area



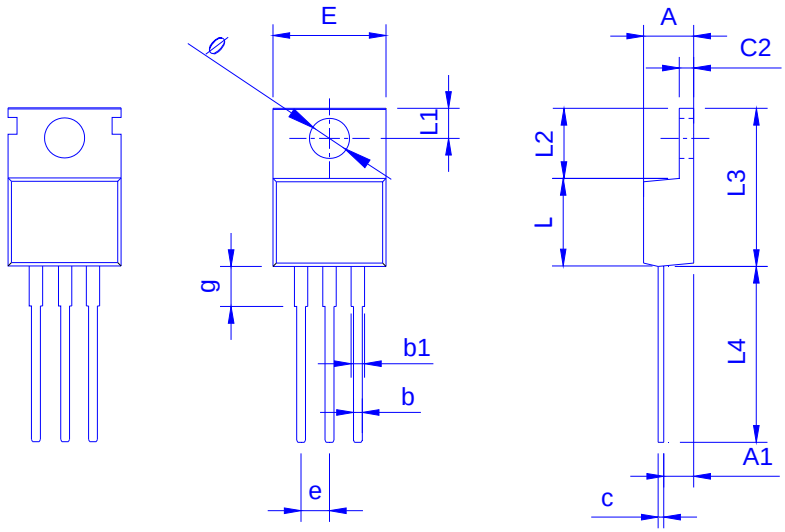
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



Outline Drawing



Dimension in mm

Dimension	A	A1	b	b1	c	c2	E	L	L1	L2	L3	L4	ø	e	g
Min.	4.07	2.04	0.60	1.15	0.31	1.11	9.90	8.30	2.50	6.00	14.30	12.70	3.40	2.04	2.85
Typ.	4.44	2.40	0.80	1.27	-	1.27	10.16	-	2.74	6.30	15.00	13.40	3.84	2.54	3.71
Max.	4.82	3.00	1.00	1.75	0.65	1.41	11.50	9.75	3.25	6.80	16.90	14.50	4.00	3.04	4.10