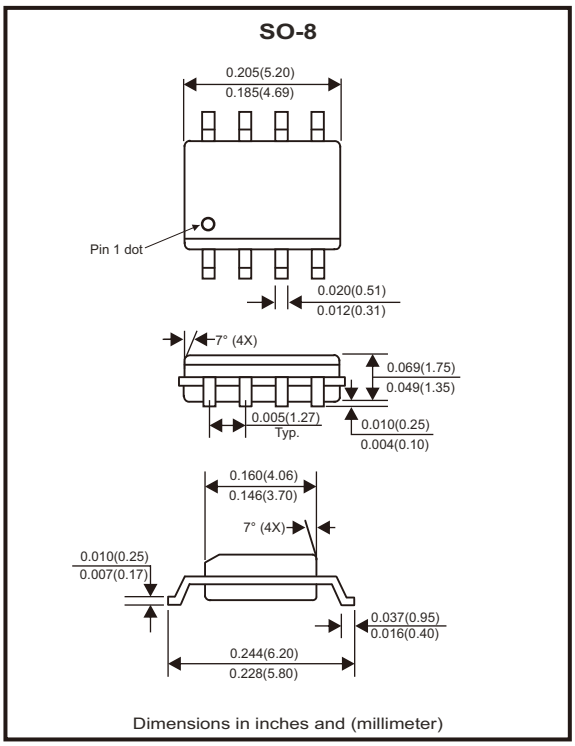
CEM3053-HF

P-Channel
RoHS Device
Halogen Free

Features

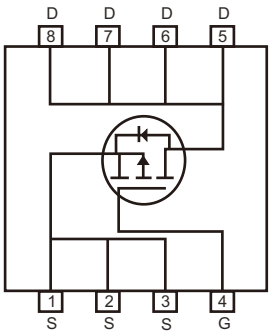
- High dense cell design for extremely low $R_{DS(ON)}$
- Rugged and reliable



Mechanical data

- Case: SO-8, molded plastic.

Circuit diagram



Maximum Ratings (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-source voltage	V_{DS}	-30	V
Gate-source voltage	V_{GS}	±20	V
Drain current-continuous	I_D	-15	A
Drain current-pulsed [a]	I_{DM}	-60	A
Maximum power dissipation	P_D	2.5	W
Thermal resistance, Junction to ambient [b]	$R_{\theta JA}$	50	°C/W
Operating temperature range	T_J	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V			-1	μA
Gate-source leakage current, forward	I_{GSSF}	V_{GS} = 20V, V_{DS} = 0V			100	nA
Gate-source leakage current, reverse	I_{GSSR}	V_{GS} = -20V, V_{DS} = 0V			-100	nA
On characteristics[c]						
Gate threshold voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = -250μA	-0.8		-2	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -6.5A		5.5	7	mΩ
		V_{GS}= -4.5V, I_D= -6.5A		7.0	9.5	mΩ
Dynamic characteristics[d]						
Input capacitance	C_{iss}	V_{DS} = -10V, V_{GS} = 0V, f = 1MHZ		5190		pF
Output capacitance	C_{oss}			1145		pF
Reverse transfer capacitance	C_{rss}			730		pF
Switching Characteristics[d]						
Turn-on delay time	$t_{d(on)}$	V_{DD} = -15V, I_D = -6.5A V_{GS} = -10V, R_{GEN} = 4.7Ω		26	52	ns
Turn-on rise time	t_r			17	34	ns
Turn-off delay time	$t_{d(off)}$			145	290	ns
Turn-off fall time	t_f			69	138	ns
Total gate charge	Q_g	V_{DS} = -24V, I_D = -13A V_{GS} = -10V		128	166	nc
Gate-source charge	Q_{gs}			16		nc
Gate-drain charge	Q_{gd}			35		nc
Drain-source diode characteristics and maximum ratings						
Drain-source diode forward current[b]	I_S				-1	A
Drain-source diode forward voltage[c]	V_{SD}	V_{GS} = 0V, I_S = -1A			-1.2	V

Note:
a. Repetitive rating: Pulse width limited by maximum junction temperature.
b. Surface mounted on FR4 board, t ≦10 sec.
c. Pulse test: Pulse width ≦ 300μs, duty cycle ≦ 2%
d. Guaranteed by design, not subject to production testing

RATING AND CHARACTERISTIC CURVES (CEM3053-HF)

Fig.1 - Output Characteristics

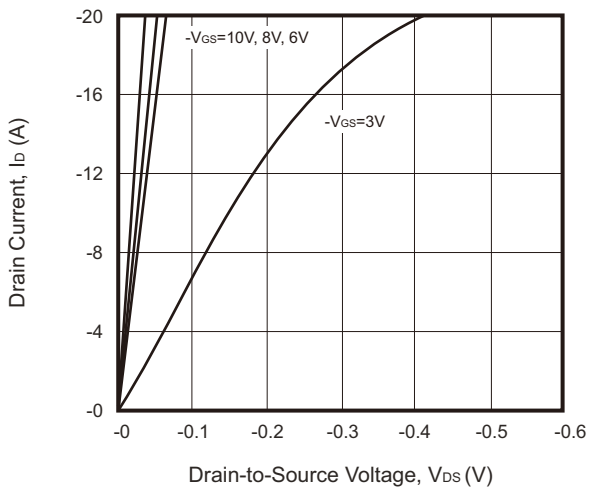


Fig.2 - Transfer Characteristics

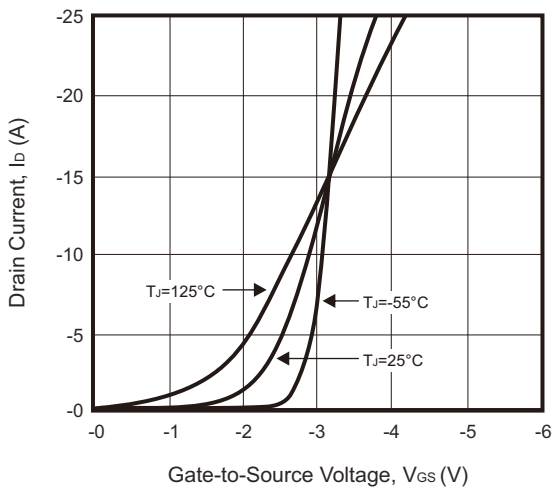


Fig.3 - Capacitance

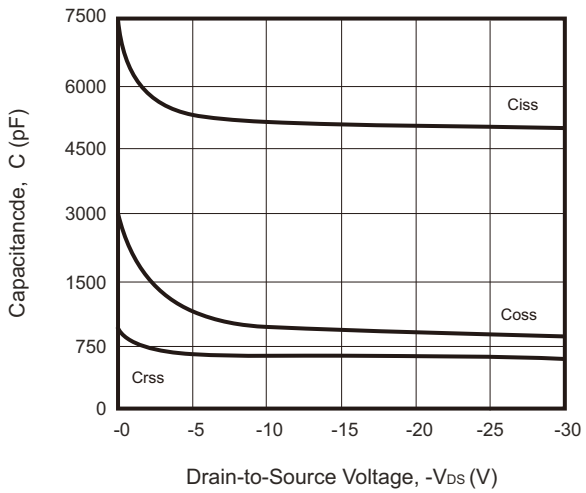


Fig.4 - Transfer Characteristics

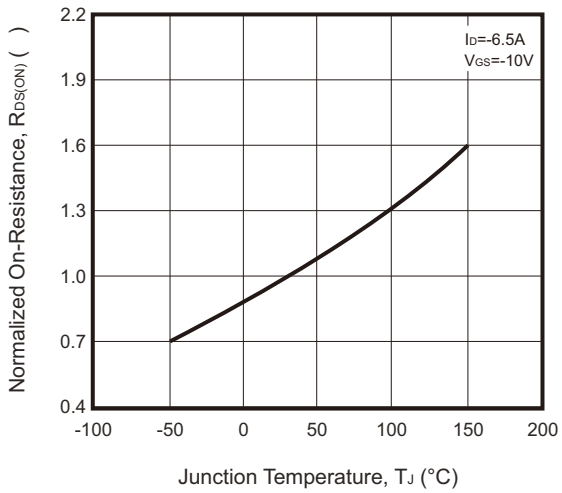


Fig.5 - Gate Threshold Variation With Temperature

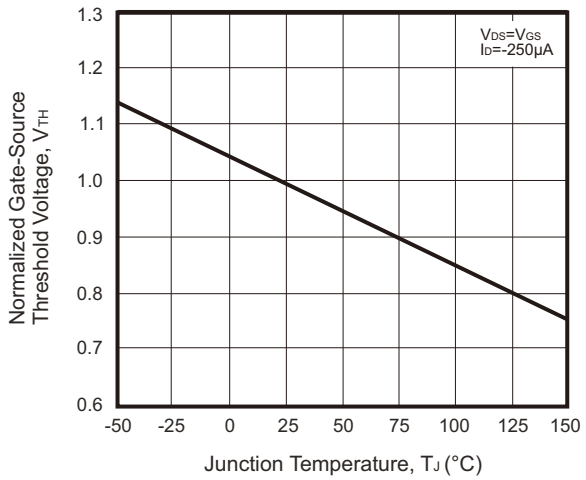
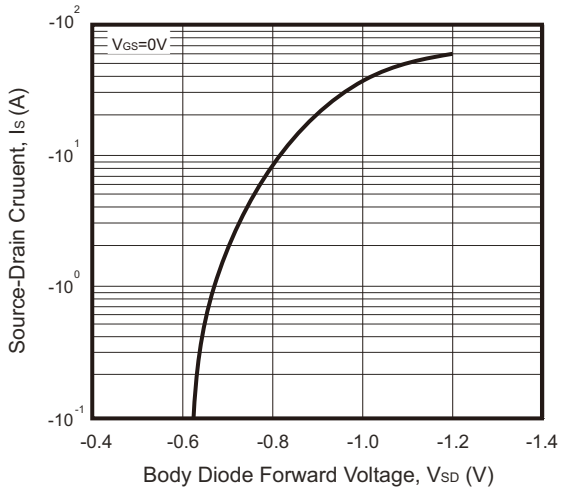


Fig.6 - Body Diode Forward Voltage Variation With Source Current



RATING AND CHARACTERISTIC CURVES (CEM3053-HF)

Fig.7 - Gate Charge

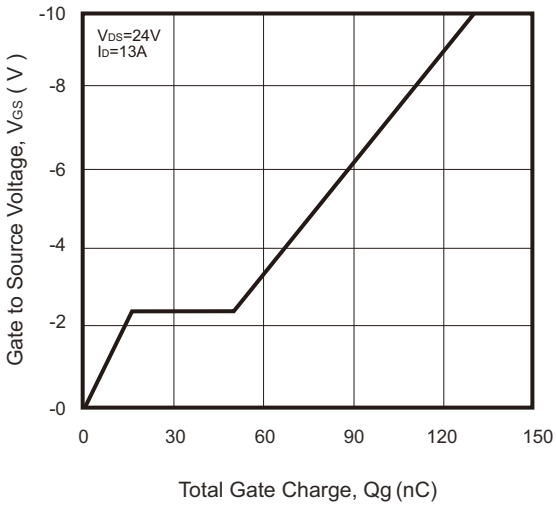


Fig.8 - Maximum Safe Operating Area

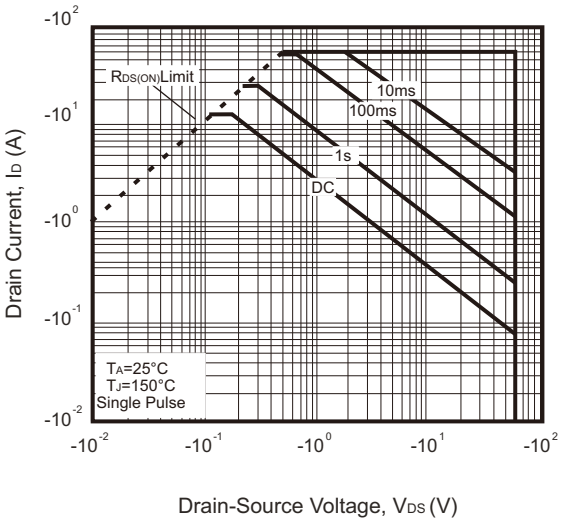


Fig.9 - Switching Test Circuit

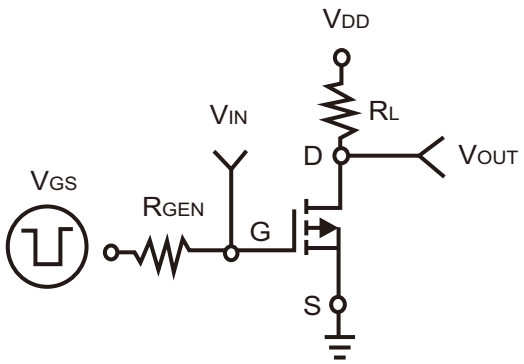


Fig.10 - Switching Waveforms

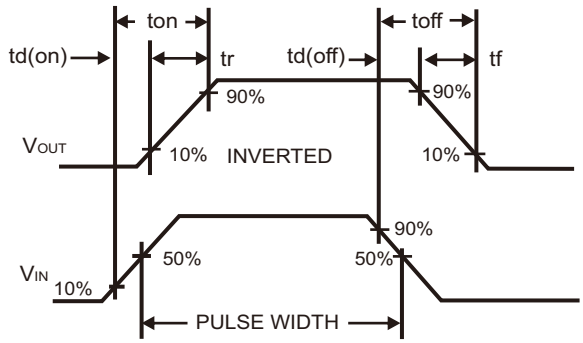
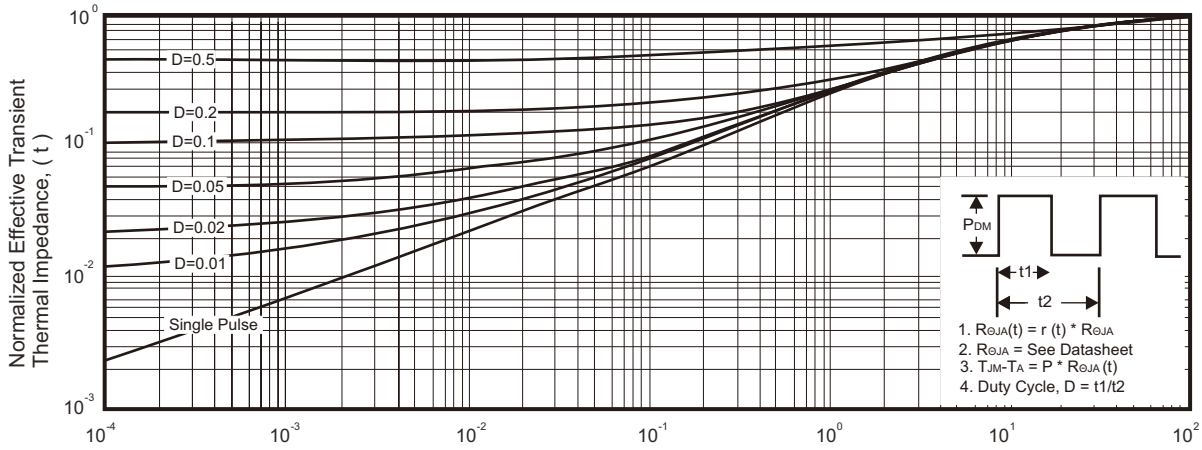
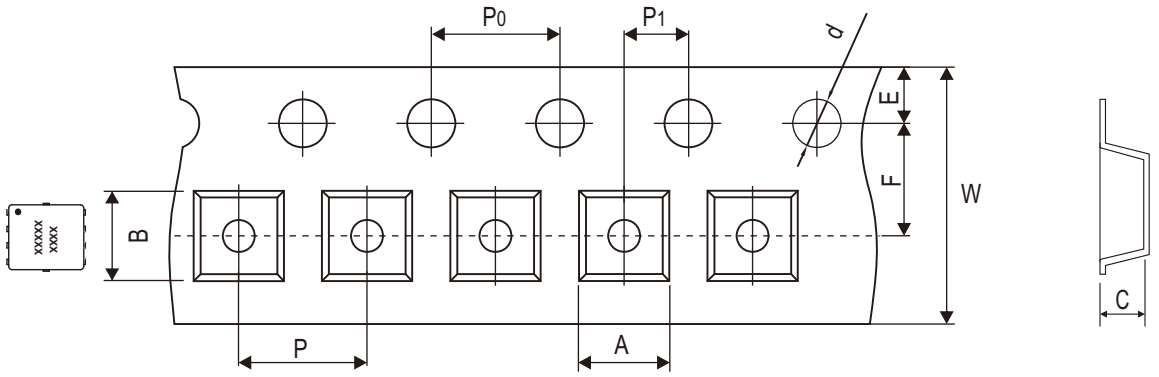
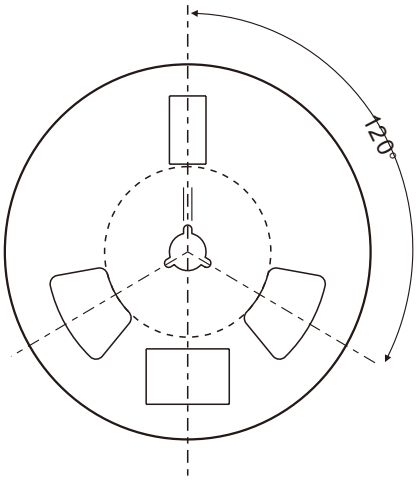


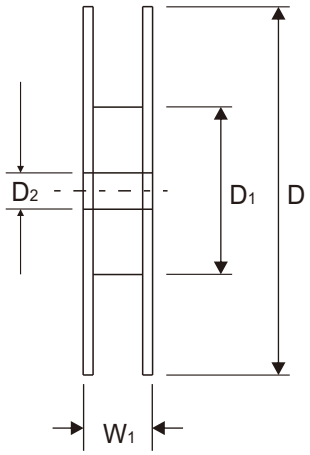
Fig.11 - Normalized Thermal Transient Impedance Curve

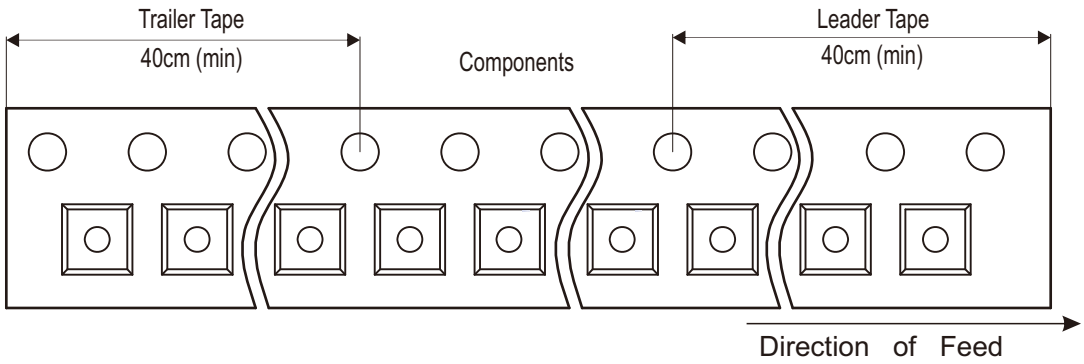


Reel Taping Specification







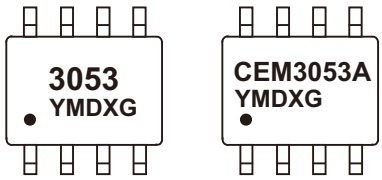


	SYMBOL	A	B	C	d	D	D1	D2
SO-8	(mm)	6.50 ± 0.10	5.30 ± 0.10	2.05 ± 0.10	1.50 + 0.10 - 0.00	330.00 ± 1.00	100.00 ± 2.00	13.00 + 0.50 - 0.20
	(inch)	0.256 ± 0.004	0.209 ± 0.004	0.081 ± 0.004	0.059 + 0.004 - 0.000	12.992 ± 0.040	3.937 ± 0.079	0.512 + 0.020 - 0.008

	SYMBOL	E	F	P	P0	P1	W	W1
SO-8	(mm)	1.75 ± 0.10	5.50 ± 0.10	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	12.00 ± 0.10	12.40 + 1.00 - 0.00
	(inch)	0.069 ± 0.004	0.217 ± 0.004	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.472 ± 0.004	0.488 + 0.039 - 0.000

Marking Code

Part Number	Marking Code	
CEM3053-HF	3053	CEM3053A



Month Code

Code	1	2	3	4	5	6	7	8
Month	1	2	3	4	5	6	7	8
Code	9	A	B	C				
Month	9	10	11	12				

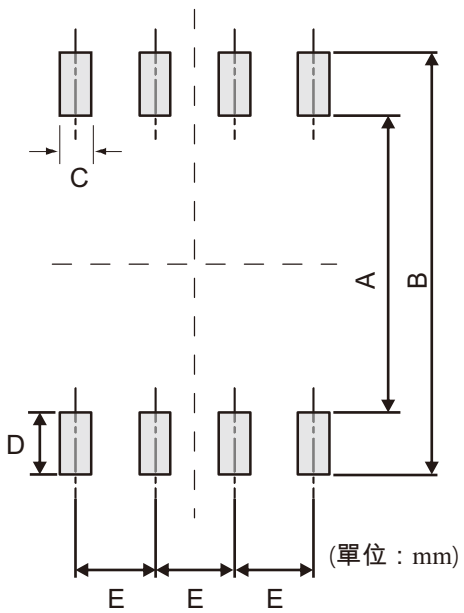
Day Code

Code	1	2	3	4	5	6	7	8
Day	01	02	03	04	05	06	07	08
Code	9	A	B	C	D	E	F	G
Day	09	10	11	12	13	14	15	16
Code	H	I	J	K	L	M	N	O
Day	17	18	19	20	21	22	23	24
Code	P	Q	R	S	T	U	V	
Day	25	26	27	28	29	30	31	

- Y : Year Code, AD 2016=6
- M : Month Code
- D : Day Code: (Refer to the table on the left)
- X : Serial No.
- G : Green Product
- ● : Pin 1 Point

Suggested PAD Layout

SIZE	SO-8	
	(mm)	(inch)
A	4.75	0.187
B	6.75	0.266
C	0.50	0.020
D	1.00	0.039
E	1.27	0.05



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SO-8	2,500	13

Company reserves the right to improve product design , functions and reliability without notice.